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Maintenance Information

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NOTICES Notices

Note

Before using this information and the product it supports, be sure to read the general information under ["Notices" in topic LEGEND.](#)

| **5494 on the World Wide Web:**
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EDITION Edition Notice

| **Sixth Edition (November 1996)**

| This edition applies to Release 3.2 of the IBM 5494 Remote Control
| Unit and to all subsequent releases and modifications until otherwise indicated in new editions.

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LEGEND.1 Safety

Safety notices are printed throughout this manual. **DANGER** notices warn you of conditions or procedures that can result in death or severe personal injury. **CAUTION** notices warn you of conditions or procedures that can cause personal injury that is neither lethal nor extremely hazardous. **Attention:** notices warn you of conditions and procedures that can cause damage to machines, equipment, or programs.

Subtopics:

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-

LEGEND.1.1 United Kingdom

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You may do this either by choosing products which also are approved as complying to BS6301 or British Telecom Technical Guide No. 26, or by the use of approved safety barriers. Consult the local office of your public telecommunication operator, for advice and permission to make the connections.

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Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Subtopics:

- [LEGEND.2.1 Industry Canada Class A Emission Compliance Statement](#)
 - [LEGEND.2.2 Avis de conformité aux normes d'Industrie Canada](#)
 - [LEGEND.2.3 Japanese Voluntary Control Council for Interference \(VCCI\) Statement](#)
-

LEGEND.2.1 Industry Canada Class A Emission Compliance Statement

This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

LEGEND.2.2 Avis de conformité aux normes d'Industrie Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

LEGEND.2.3 Japanese Voluntary Control Council for Interference (VCCI) Statement

This equipment is Class 1 Equipment (information equipment to be used in commercial and industrial districts) which is in conformance with the standard set by Voluntary Control for Interference by Data Processing Equipment and Electronic Office Machines (VCCI) with an aim to prevent radio interference in commercial and industrial districts.

This equipment could cause interference to radio and television receivers when used in and around residential districts.

Please handle the equipment properly according to the instruction manual.

LEGEND.3 System Security Advice

This product is intended for use within a single establishment and within a single homogeneous user population. For sensitive applications requiring isolation from each other, management may wish to provide isolated cabling or to encrypt the sensitive data before putting it on the network.

LEGEND.4 Trademarks

The following terms are trademarks of the IBM Corporation in the United States or other countries or both:

Application System/400	Operating System/400
APPN	OS/2
AS/400	OS/400
AT	PC XT
DisplayWrite	Personal Computer AT
Extended Services	Personal Computer XT
IBM	Personal System/2
Impactwriter	Personal System/55
InfoWindow	PS/2
Intelligent Printer Data Stream	PS/55
IPDS	RISC System/6000
Operating System/2	RS/6000

UNIX is a registered trademark in the United States and other countries licensed exclusively through X/Open Company Limited.

Other company, product, and service names, which may be denoted by a double asterisk (**), may be trademarks or service marks of others.

LEGEND.5 World Trade Safety Information

Some countries require the safety information in publications to be presented in their national languages. See [Appendix A, "Safety Notices"](#) for the translations of the DANGER and CAUTION notices in this manual.

Before using an English-language publication to set up, install, or operate this IBM product, you first should become familiar with the related safety information. Refer to [Appendix A, "Safety Notices"](#) any time you do not clearly understand any safety information in this manual.

Subtopics:

- [LEGEND.5.1 Translated Safety Notices](#)

LEGEND.5.1 Translated Safety Notices

U.S. English	You can find translated safety notices in Appendix A, "Safety Notices."
Belgian Dutch	U vindt de vertaalde veiligheidsvoorschriften in Appendix A, "Safety Notices."
Brazilian Portuguese	Você pode achar as notas de segurança traduzidas no apêndice A, "Safety Notices."
Canadian French	La traduction des consignes de sécurité se trouve à l'Annexe A, "Consignes de sécurité."
Chinese	(中文) 您可以在附錄 A "安全須知" 中，找到 已翻譯好的 "安全須知"。
Croatian	Hrvatski Sigurnosne opaske možete naći u dodatku A, "Sigurnosne opaske".
Danish	De danske sikkerhedsforskrifter findes i Appendix A, "Sikkerhedsforskrifter" (Safety Notices).
Finnish	Suomennetut turvaohjeet ovat liitteessä A, "Safety Notices."
French	Vous trouverez les notices de sécurité traduites dans l'annexe A, "Notices de Sécurité."
German	Die Übersetzung der Sicherheitshinweise ist in Anhang A, "Sicherheitshinweise," enthalten.
Italian	La traduzione delle informazioni di sicurezza è nell'Appendice A, "Informazioni di sicurezza."
Japanese	付録 A. 「安全に関する注意」に翻訳された安全に関する但し書きが記載されています。
Korean	번역된 안전 정보를 부록 A의 "안전 정보"에서 찾을 수 있습니다.
Norwegian	Du finner oversatt sikkerhetsinformasjon i Tillegg A, "Sikkerhetsinformasjon."
Polish	Polski Przetłumaczone uwagi dotyczące bezpiecznej eksploatacji można znaleźć w Dodatku A, "Zasady bezpiecznej eksploatacji".
Portuguese	Localize os avisos de segurança traduzidos no Apêndice A, "Avisos de Segurança."
Russian	РУССКИЙ Инструкции по технике безопасности находятся в Приложении А "Инструкции по технике безопасности".

Spanish	Podrá hallar los avisos de seguridad traducidos en el Apéndice A, "Avisos de Seguridad."
Swedish	Svenska varningstexter finns i avsnittet "Appendix A, Safety Notices."

LEGEND.6 CE Safety Inspection Procedures

If a safety inspection is required, start the procedure with the IBM 5494 Remote Control Unit (the 5494) power turned **OFF** and the electrical power cord removed from the power outlet.

See the following documentation for information about safety inspections:

- All service memorandums, engineering change announcements (ECAs), and service aids (SAs) for this 5494
- *Electrical Safety for IBM Customer Engineers*, S229-8124
- *General Safety Course*, 80114.

Subtopics:

- [LEGEND.6.1 How to Conduct This Safety Inspection](#)
- [LEGEND.6.2 External Inspection](#)
- [LEGEND.6.3 Internal Inspection](#)
- [LEGEND.6.4 Safety Label](#)
- [LEGEND.6.5 Grounding Circuits](#)

LEGEND.6.1 How to Conduct This Safety Inspection

This inspection guide helps identify unsafe conditions on 5494s that you are inspecting. At the time of manufacture, each 5494 has all the necessary safety items installed to protect the owners, operators, and service personnel from injury. This inspection addresses only these items. You should use good judgment to identify possible safety hazards not covered by this inspection guide.

If unsafe conditions are present, contact your field manager for the suitable action to be taken before you service the 5494.

Also, consider the following safety hazards that can be present:

1. Electrical hazards, especially primary power. For example, a frame without a good ground can cause serious or lethal electrical shock.
2. Exploding hazards. For example, a damaged cathode ray tube (CRT) face or distorted capacitors can explode and cause serious injury.
3. Chemical hazards. For example, the use of solvents not specified by IBM may result in electrical, mechanical, or toxic hazards.

This guide contains a safety inspection procedure for the following:

- External inspection
- Internal inspection.

"[Safety Label](#)" in topic [LEGEND.6.4](#) shows the location of the safety label on the 5494. Refer to this figure as you do the safety inspection.

LEGEND.6.2 External Inspection

Do the following checks:

1. Is the external cover present, installed correctly, and in good condition?
 2. Is the 5494 power cord in good condition? Is the power cord part number correct for this unit? Refer to [Topic 8, "Parts Catalog."](#)
 3. Does the 5494 have the correct approved power plug for your country? (See [Topic 8, "Parts Catalog"](#) for the correct plug type.)
 4. Is the power connector at the back of the 5494 damaged?
 5. Is the ac ground connection good from one end of the power cord to the other? The resistance of this conductor should be less than 0.1 ohm.
 6. Is the customer's line voltage the correct voltage for the power supply in the 5494?
-

LEGEND.6.3 Internal Inspection

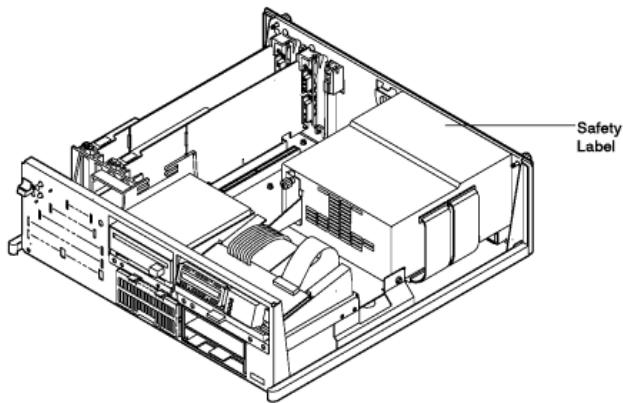
Do the following checks:

1. Is the power supply cover present and securely fastened?
 2. Are there any obvious non-IBM engineering changes? If the answer to this question is yes, complete *Non-IBM Alteration Attachment Survey*, G150-0197.
 3. Are there any loose screws, contaminating chemicals, signs of water or moisture, signs of fire or smoke damage, metal particles or dust, or any other internal conditions that look hazardous?
 4. Are any cables visibly worn, pinched, or damaged in any way? Check the primary power area for broken wires.
 5. Does the 5494 chassis have a good ground? The grounding circuits are shown in "[Grounding Circuits](#)" in topic [LEGEND.6.5](#). Measure the resistance from the ground pin on the ac power plug to any portion of the metal chassis that does not carry electrical current. Resistance must be less than 0.1 ohm.
 6. Are any of the capacitors in the power area leaking or distorted?
-

LEGEND.6.4 Safety Label

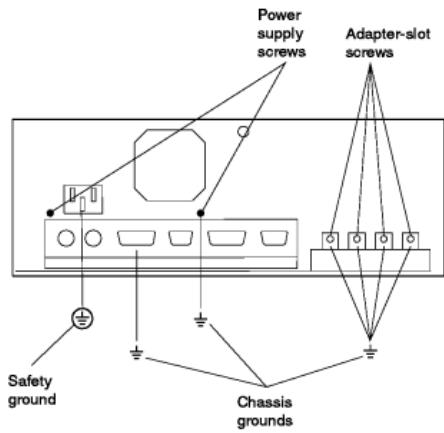
Check the safety label as shown in the following figure:

- Is there a hazardous voltage label attached to the power supply?
- Are all parts installed in place securely?



LEGEND.6.5 Grounding Circuits

Make sure that the grounding circuits shown in the following figure are present and secure.



LEGEND.7 Procedimentos de Inspeção de Segurança CE

Caso uma inspeção de segurança seja necessária, inicie-a com a força da Unidade de Controle Remoto 5494 da IBM (5494) **DESLIGADA** e o cabo de força desconectado da tomada elétrica.

Para maiores informações sobre inspeções de segurança, consulte as publicações relacionadas abaixo:

- Todas as notas de funcionamento, anúncios sobre alterações de engenharia (ECAs) e auxílios de serviços (SAs) para este 5494
- *Electrical Safety for IBM Customer Engineers*, S229-8124
- *General Safety Course*, 80114.

Subtopics:

- [LEGEND.7.1 Como Realizar a Inspeção de Segurança](#)
 - [LEGEND.7.2 Inspeção Externa](#)
 - [LEGEND.7.3 Inspeção Interna](#)
 - [LEGEND.7.4 Rótulo de Segurança](#)
 - [LEGEND.7.5 Circuitos de Aterramento](#)
-

LEGEND.7.1 Como Realizar a Inspeção de Segurança

Este guia de inspeção ajuda a identificar condições perigosas no 5494s que está sendo inspecionado. Na fabricação, todos os itens de segurança necessários são instalados no 5494 para proteger os proprietários, operadores e equipe de manutenção de ferimentos. A inspeção visa apenas esses itens. Você deve usar sua capacidade de discernimento para identificar possíveis condições perigosas de segurança que não estejam mencionados neste guia de inspeção.

Caso existam condições perigosas, entre em contato com o gerente de área para conhecer a ação a ser tomada antes de trabalhar no 5494.

Também analise as condições perigosas abaixo:

1. Perigos elétricos, especialmente a força primária. Por exemplo, uma estrutura sem aterragem correta pode causar um choque elétrico grave ou letal.
2. Perigos de explosões. Por exemplo, a superfície danificada de um tubo de raios catódicos (CRT) ou capacitores danificados podem explodir e causar ferimentos sérios.
3. Perigos químicos. Por exemplo, a utilização de solventes não especificados pela IBM pode produzir perigos tóxicos, mecânicos ou elétricos.

Este guia contém os procedimentos de inspeção de segurança para:

- Inspeção externa
- Inspeção interna.

A seção "[Rótulo de Segurança](#)" in topic [LEGEND.7.4](#) apresenta a localização do rótulo de segurança no 5494. Consulte a figura, conforme realiza a inspeção de segurança.

LEGEND.7.2 Inspeção Externa

Faça as seguintes verificações:

1. A tampa externa está presente, instalada corretamente e em boas condições?
 2. O cabo de força do 5494 está em boas condições? O cabo de força é apropriado para a unidade? (Consulte [Topic 8, "Parts Catalog"](#) para obter o número da peça correta.)
 3. O 5494 apresenta a tomada correta, aprovada para o seu país? (Consulte [Topic 8, "Parts Catalog"](#) para obter o tipo correto de tomada.)
 4. O conector do cabo de força na parte posterior do 5494 está danificado?
 5. A conexão de aterramento de corrente alternada está correta de uma extremidade a outra do cabo de força? A resistência do condutor deve ser menor do que 0,1 ohm.
 6. A linha de voltagem do cliente apresenta a voltagem correta para a fonte de alimentação no 5494?
-

LEGEND.7.3 Inspeção Interna

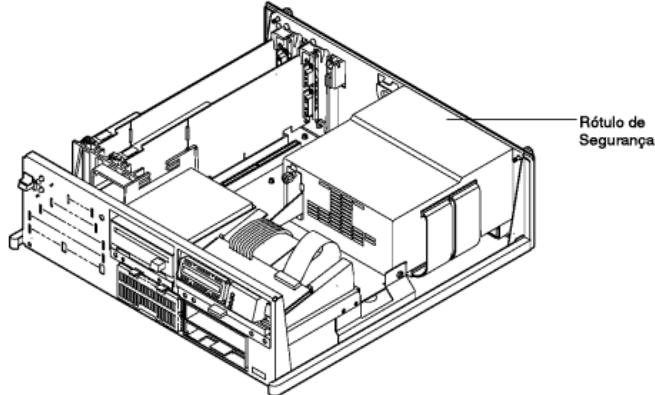
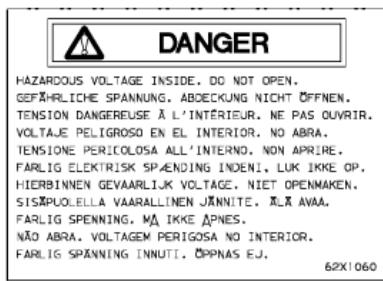
Faça as seguintes verificações:

1. A tampa da fonte de alimentação está presente e presa corretamente?
 2. Há alterações de engenharia não-IBM evidentes? Caso afirmativo, complete o *Non-IBM Alteration Attachment Survey*, G150-0197.
 3. Há parafusos frouxos, substâncias químicas poluentes, sinais de água ou umidade, sinais de danos de incêndio ou de fumaça, partículas metálicas ou poeira ou outras condições internas que representem perigo?
 4. Há algum cabo visivelmente gasto ou danificado? Verifique a área da força primária para detectar cabos partidos.
 5. O chassi do 5494 apresenta o aterramento correto? Os circuitos de aterramento são apresentados na seção "[Circuitos de Aterramento](#)" in [topic LEGEND.7.5](#). Meça a resistência do pino de aterramento na tomada de força de corrente alternada até qualquer parte do chassi metálico que não transporte corrente elétrica. A resistência deve ser menor do que 0,1 ohm.
 6. Há algum capacitor na área de força vazando ou danificado?
-

LEGEND.7.4 Rótulo de Segurança

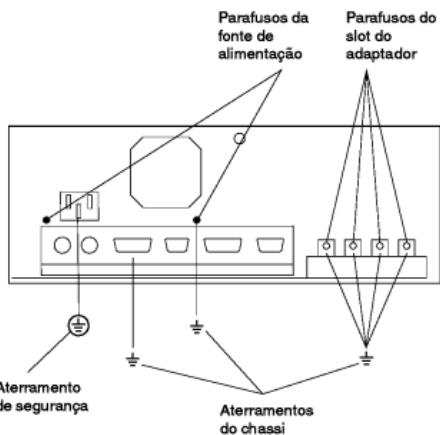
Verifique o rótulo de segurança, como demonstrado na figura abaixo:

- Há algum rótulo de voltagem perigosa afixado na fonte de alimentação?
- Todas as peças estão instaladas de modo seguro?



LEGEND.7.5 Circuitos de Aterramento

Certifique-se de que os circuitos de aterramento da figura abaixo estejam presentes e seguros.



LEGEND.8 Procédures d'inspection de sécurité par un inspecteur IBM

Lorsqu'une inspection de sécurité s'avère nécessaire, commencez par mettre **HORS TENSION** l'unité de contrôle à distance IBM (le 5494) et débrancher le cordon d'alimentation électrique de la prise secteur.

Pour en savoir plus sur les inspections de sécurité, reportez-vous à la documentation suivante :

- Tous les mémorandums de maintenance (SM), les annonces de modification technique (ECA), et les guides relatifs au 5494
- *Electrical Safety for IBM Customer Engineers*, S229-8124
- *General Safety Course*, 80114.

Subtopics:

- [LEGEND.8.1 Comment procéder à une inspection de sécurité](#)
- [LEGEND.8.2 Inspection externe](#)
- [LEGEND.8.3 Inspection interne](#)
- [LEGEND.8.4 Etiquette de sécurité](#)
- [LEGEND.8.5 Circuits de mise à la terre](#)

LEGEND.8.1 Comment procéder à une inspection de sécurité

Ce guide d'inspection vous aidera à identifier tout risque potentiel pour la sécurité sur les 5494s que vous inspectez. Au moment de sa fabrication, chaque 5494 est équipé de dispositifs de sécurité destinés à garantir la sécurité des utilisateurs, des opérateurs et du personnel de maintenance. Ce guide ne concerne que ces dispositifs. D'autres risques ne sont peut-être pas abordés ici. Il vous appartient d'en évaluer l'importance.

Si les conditions de sécurité ne sont pas réunies, contactez le responsable de secteur pour connaître la marche à suivre avant de réparer un 5494.

Voici des exemples de situations dangereuses comportant des risques pour votre sécurité :

1. Risques électriques, en particulier concernant le bloc d'alimentation primaire. Par exemple, un châssis qui n'est pas mis à la terre peut causer un choc électrique grave, voire mortel.
2. Risques d'explosion. Par exemple, un tube à rayon cathodique endommagé ou des condensateurs déformés peuvent exploser et causer de graves accidents.
3. Risques chimiques. Par exemple, l'usage de solvants non indiqués par IBM peut entraîner des accidents électriques, mécaniques, ou toxiques.

Ce guide explique les procédures à suivre pour les inspections de sécurité suivantes :

- Inspection externe.
- Inspection interne.

La figure "[Etiquette de sécurité](#)" in topic [LEGEND.8.4](#) montre l'emplacement de l'étiquette de sécurité sur le 5494. Reportez-vous à cette figure pour procéder à l'inspection.

LEGEND.8.2 Inspection externe

Vérifiez les points suivants :

1. Le carter de protection est bien installé et en bon état.
 2. Le cordon d'alimentation du 5494 est en bon état et adapté à cette unité. (Voir [Topic 8, "Parts Catalog"](#) pour obtenir la référence.)
 3. Le 5494 est équipé de la fiche de prise de courant conforme aux normes en vigueur dans votre pays. (Voir [Topic 8, "Parts Catalog"](#) pour connaître le type de fiche approprié.)
 4. Le connecteur d'alimentation à l'arrière du 5494 n'est pas endommagé.
 5. La mise à la terre c.a. fonctionne d'un bout à l'autre du cordon d'alimentation. Vérifiez que le conducteur de mise à la terre a une résistance inférieure à 0,1 ohm.
 6. La tension secteur de l'utilisateur est adaptée au bloc d'alimentation du 5494.
-

LEGEND.8.3 Inspection interne

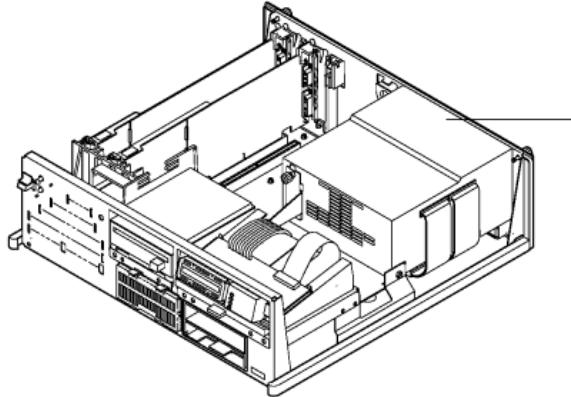
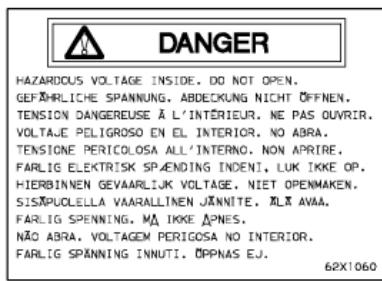
Suivez les procédures suivantes :

1. Assurez-vous que le carter du bloc d'alimentation est en place et solidement fixé.
 2. Vérifiez s'il y a des modifications techniques non IBM. Le cas échéant, remplissez le formulaire *Non-IBM Alteration Attachment Survey*, G150-0197.
 3. Portez une attention particulière à l'intérieur de l'appareil : vis desserrées, produits chimiques polluants, signes d'humidité ou de liquide, traces de fumée ou de feu, limaille ou poussière sont à proscrire.
 4. Les câbles ne doivent être ni effilochés, ni endommagés, ni usés. Inspectez le bloc d'alimentation primaire pour être sûr qu'aucun câble n'est rompu.
 5. Vérifiez la mise à la terre du châssis du 5494. Les circuits de mise à la terre sont représentés dans la figure ["Circuits de mise à la terre" in topic LEGEND.8.5](#). Mesurez la résistance entre la tige de terre du cordon d'alimentation c.a. et n'importe quelle partie du châssis métallique non électrifiée. Elle ne doit pas dépasser 0,1 ohm.
 6. Assurez-vous qu'aucun des condensateurs du bloc d'alimentation ne fuit ou n'est déformé.
-

LEGEND.8.4 Etiquette de sécurité

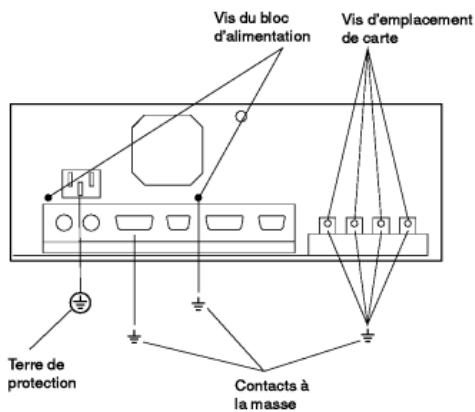
Contrôlez l'étiquette de sécurité conformément à la figure suivante :

- L'unité centrale comporte-t-elle une étiquette mentionnant une tension dangereuse ?
- Toutes les pièces sont-elles correctement placées ?



LEGEND.8.5 Circuits de mise à la terre

Contrôlez les circuits de mise à la terre présentés dans cette figure et assurez-vous qu'ils ne présentent aucun risque.



LEGEND.9 Procedimientos Para Inspección De Seguridad De CE

Si se necesita llevar a cabo una inspección de seguridad, empiece el procedimiento con el interruptor de corriente de la Unidad de Control Remoto IBM 5494 (la 5494) en **OFF** y con el cordón eléctrico desenchufado del tomacorriente.

Para más información sobre las inspecciones de seguridad, consulte las siguientes referencias:

- Todos los memorandums sobre servicio, avisos sobre cambios técnicos y ayudas para servicio para esta 5494.
- El libreto -- *Electrical Safety for IBM Customer Engineers*, S229-8124 [Protección Eléctrica para los Representantes de Servicio Técnico de IBM]
- El libreto -- *General Safety Course*, 80144 [Curso General d Seguridad]

Subtopics:

- [LEGEND.9.1 Cómo se Debe Llevar a Cabo Esta Inspección de Seguridad](#)
- [LEGEND.9.2 Inspección Externa](#)
- [LEGEND.9.3 Inspección Interna](#)
- [LEGEND.9.4 Etiqueta de Seguridad](#)
- [LEGEND.9.5 Circuitos de Puesta a Tierra](#)

LEGEND.9.1 Cómo se Debe Llevar a Cabo Esta Inspección de Seguridad

Esta guía de inspección ayuda a indentificar condiciones peligrosas en la 5494 que está examinando. Durante la fabricación, cada 5494 tiene todos los artículos de seguridad instalados para proporcionar protección contra cualquier daño a los dueños, operadores y personal de servicio técnico. Deberá usar buen juicio para identificar si hay condiciones peligrosas de seguridad que no estén cubiertas en la guía de inspección.

Si determina que se encuentra presente cualquier condición de peligro, póngase en contacto con el gerente en su área para que le recomiende la acción que deberá tomar antes de proporcionar servicio técnico a la 5494.

También considere las siguientes condiciones de peligro que pueden estar presentes:

1. Peligros eléctricos, especialmente de la corriente principal. Por ejemplo, un cuadro que no esté bien conectado a tierra puede causar un choque eléctrico serio o aún fatal.
2. Peligros de explosión. Por ejemplo, un tubo de rayos catódicos (CRT) que tenga la cara dañada o cuyos capacitores estén distorsionados puede explotar y causar daños serios.
3. Peligros por productos químicos. Por ejemplo, el uso de solventes que no estén especificados por IBM puede resultar en peligros eléctricos, mecánicos o de toxicidad.

Esta guía contiene el procedimiento de inspección de seguridad para las siguientes áreas:

- Inspección externa
- Inspección interna.

"[Etiqueta de Seguridad](#)" in topic [LEGEND.9.4](#) donde está la etiqueta de seguridad en la 5494. Consulte esta figura cuando lleve a cabo la inspección de seguridad.

LEGEND.9.2 Inspección Externa

Lleve a cabo las siguientes comprobaciones:

1. ¿Está presente, correctamente instalada y en buena condición la cubierta exterior?
 2. ¿Está en buena condición el cordón eléctrico de la 5494? ¿Es este el cordón adecuado para este aparato? (Consulte [Topic 8, "Parts Catalog"](#) para averiguar el número correcto de este repuesto.)
 3. ¿Tiene la 5494 el tomacorriente aprobado para su país? (Consulte [Topic 8, "Parts Catalog"](#) para averiguar el tipo adecuado.)
 4. ¿Está dañado el conector de corriente en la parte trasera de la 5494?
 5. ¿Está buena la conexión a tierra de la corriente ca de un extremo a otro del cordón eléctrico? La resistencia de este conductor deberá ser menor de 0,1 ohm.
 6. ¿Es el voltaje de la línea del cliente el correcto para la fuente de alimentación de energía de la 5494?
-

LEGEND.9.3 Inspección Interna

Lleve a cabo las siguientes comprobaciones:

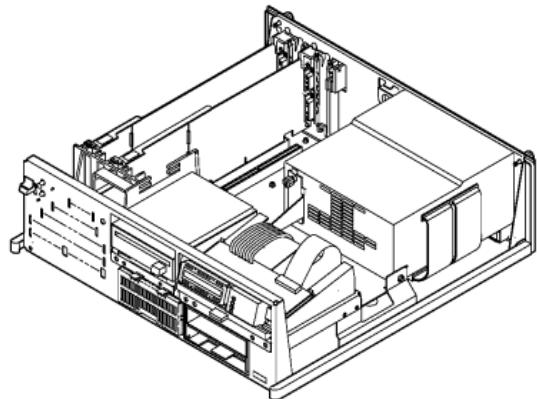
1. ¿Está presente y bien asegurada la cubierta de la fuente de alimentación de energía?
 2. ¿Existen cambios que obviamente no son de tecnología IBM? Si la respuesta a esta pregunta es si, llene el formulario *Non-IBM Alteration Attachment Survey*, G150-0197 [Cuestionario Sobre Cambios y Accesorios no IBM].
 3. ¿Puede ver tornillos flojos, contaminación por productos químicos, señales de agua o humedad, señales de daño por fuego o humo, partículas de metal o polvo, o cualquier otra condición interna que le parece peligrosa?
 4. ¿Está cualquiera de los cables visiblemente débil, roto o dañado de alguna otra forma? Chequee el área de la energía principal para ver si hay cables rotos.
 5. ¿Está bien conectado a tierra el chasis de la 5494? Los circuitos de puesta a tierra se muestran en ["Circuitos de Puesta a Tierra" in topic LEGEND.9.5](#). Mida la resistencia desde el conector a tierra en el tomacorriente de energía ca hasta cualquier porción del chasis de metal que no lleve corriente eléctrica. La resistencia deberá ser menor de 0,1 ohm.
 6. ¿Se está saliendo o está distorsionado cualquiera de los capacitores del área de energía?
-

LEGEND.9.4 Etiqueta de Seguridad

Chequee la etiqueta de seguridad tal como se muestra en la siguiente figura:

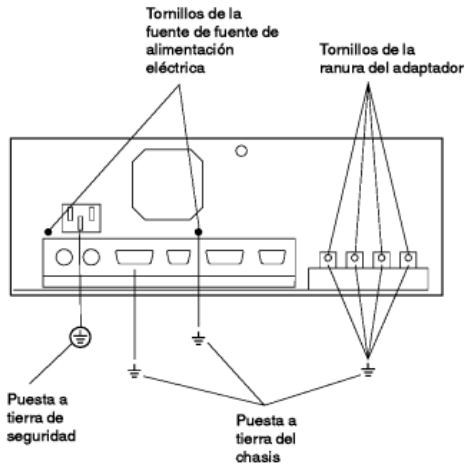
- ¿Está presente y asegurada una etiqueta de voltaje peligroso en la fuente de alimentación de energía?

- ¿Están bien instaladas y aseguradas todas las partes?



LEGEND.9.5 Circuitos de Puesta a Tierra

Asegúrese que los circuitos de puesta a tierra mostrados en la siguiente figura están presentes y asegurados.



PREFACE About This Book

This book contains information that you need to isolate and repair failures in the IBM 5494 Remote Control Unit (hereafter referred to as the 5494). This book also contains information that you need to verify that the 5494 is operating correctly after a repair is complete.

Subtopics:

- [PREFACE.1 Who Should Read This Book](#)
 - [PREFACE.2 How This Book Is Organized](#)
 - [PREFACE.3 Related Publications](#)
-

PREFACE.1 Who Should Read This Book

This book is for qualified maintenance personnel who service the 5494. Maintenance personnel should have completed the 5494 education course.

PREFACE.2 How This Book Is Organized

The topics in this book are organized as follows:

[Topic 1, Introduction](#)

This topic contains the following information:

- How to use this book
- A summary of the problem determination and repair used in this book
- General information about the 5494.

[Topic 2, Maintenance Analysis Procedures \(MAPs\)](#)

This topic contains the MAPs you will use to isolate a failure to a specific field replaceable unit (FRU).

[Topic 3, 5494 Message Codes and System Reference Codes \(SRCs\)](#)

This topic lists the message codes and system reference codes, and provides a cause and action for each.

[Topic 4, 5494 Verification Procedures](#)

This topic contains procedures to be used with the MAPs to isolate and repair 5494 failures.

[Topic 5, Removal and Replacement Procedures](#)

This topic contains FRU removal and replacement procedures.

[Topic 6, Concurrent Mode from the Operator Panel or Utility Program](#)

This topic contains the information that can be displayed at the 5494 operator panel. It also explains how to use the Utility Program to access concurrent mode information from a programmable workstation (PWS).

[Topic 7, Concurrent Mode from an NWS \(Online\)](#)

This topic describes the concurrent diagnostics screens that can be displayed at an attached display station, and explains the information that appears on each of the screens.

[Topic 8, Parts Catalog](#)

This topic shows the parts in the 5494 and supplies a complete list of part numbers.

Appendix A, Safety Notices

This appendix lists the translations of the safety notices that appear in this book.

Appendix B, Online Diagnostics and Test Information

This appendix provides a summary of the types of online diagnostics and tests that can be used with the 5494.

Appendix C, Supported Attachments

This appendix lists the Application System/400 (AS/400) systems, workstations, modems, and data circuit-terminating equipment (DCE) that can be attached to the 5494.

Appendix D, Key Sequences

This appendix lists the key sequences to be used at each keyboard supported by the 5494.

Appendix E, Tools and Test Equipment

This appendix describes the test equipment you use to isolate a failure, and special maintenance techniques.

A list of abbreviations, a glossary, and an index are provided at the back of this book.

PREFACE.3 Related Publications

The following publications contain related information:

Subtopics:

- [PREFACE.3.1 5494 Library](#)
 - [PREFACE.3.2 Service Personnel](#)
 - [PREFACE.3.3 Cabling](#)
 - [PREFACE.3.4 Application System/400 \(AS/400\)](#)
 - [PREFACE.3.5 Communication/Protocols](#)
 - [PREFACE.3.6 Local Area Networks \(LANs\)](#)
 - [PREFACE.3.7 Operating System/2 \(OS/2\) and Programmable Workstations](#)
 - [PREFACE.3.8 Systems Network Architecture \(SNA\)](#)
-

PREFACE.3.1 5494 Library

- *IBM 5494 Remote Control Unit Planning Guide*, GA27-3936
- *IBM 5494 Remote Control Unit User's Guide*, GA27-3960
- *IBM 5494 Remote Control Unit Functions Reference*, SC30-3533
- *IBM 5494 Remote Control Unit Maintenance Information*, SY27-0327
- *IBM 5494 Remote Control Unit Problem Determination Guide Quick Reference*, GA27-3909
- *IBM 5494 Remote Control Unit National Language Support for Arabic*, GA27-3910

-
- *IBM 5494 Remote Control Unit National Language Support for Hebrew*, GA27-3911

PREFACE.3.2 Service Personnel

- *Basic Oscilloscope Operation*, SR28-0465
 - *Electrical Safety for IBM Customer Engineers*, S229-8124
 - *General Safety Course*, 80114
-

PREFACE.3.3 Cabling

- *LAN Cabling System Planning and Installation Guide*, GA27-3361
 - *IBM Cabling System Problem Determination Guide for Twinaxial Applications*, GA21-9491
 - *IBM 5299 Terminal Multiconnector Model 3 Planning, Installation and Problem Analysis Guide*, GA27-3749
 - *Using the Cabling System with Communication Products*, GA27-3620
 - *Cabling System Optical Fiber Planning and Installation Guide*, GA27-3943
-

PREFACE.3.4 Application System/400 (AS/400)

- *AS/400 Communications: Configuration*, SC41-3401
- *AS/400 Local Area Network Support*, SC41-3404
- *AS/400 X.25 Network Support*, SC41-3405
- *AS/400 Communications: Local Area Network Guide*, SC41-0004
- *AS/400 Communication: Management*, SC41-3406
- *AS/400 OS/400 Workstation Customization Programming*, SC41-3605
- *AS/400 Programming: Performance Tools/400*, SC41-3340
- *AS/400 Programming: Work Management*, SC41-3306

-
- AS/400 Remote Work Station Support, SC41-3402

PREFACE.3.5 Communication/Protocols

- *Data Communications Concepts*, GC21-5169
 - *High-Speed Networking Technology: An Introductory Survey*, GG24-3816 (for frame-relay information)
 - *Implementation of X.21 Interface, General Information Manual*, GA27-3287
 - *Synchronous Data Link Control Concepts*, GA27-3093
 - *The X.25 1984.1988 Interface for Attaching SNA Nodes to Packet-Switched Data Networks General Information Manual*, GA27-3761
-

PREFACE.3.6 Local Area Networks (LANs)

- *IBM Local Area Network Administrator's Guide*, GA27-3748
 - *IBM Local Area Network Concepts and Products*, GG24-3178
 - *The Ethernet: A Local Area Network, Version 2.0*, November, 1982, XNSS-018211, Third Printing, 1985
 - *IBM Multisegment LAN Design Guidelines*, GG24-3398
 - *IBM Token-Ring Network Installation Guide*, GA27-3678
 - *IBM Token-Ring Network Architecture Reference*, SC30-3374
 - *IBM Token-Ring Network Guide to Small Networks*, SK2T-0300
 - *IBM Token-Ring Network Introduction and Planning Guide*, GA27-3677
 - *IEEE 802.3 Local Area Network Considerations*, GG22-9422
 - *LAN Technical Reference: IEEE 802.2 and NetBIOS Application Program Interfaces* SC30-3587
 - *LAN Technical Reference: Ethernet Adapter Interface*, SC30-3661
 - *LAN Technical Reference: Token-Ring Network Adapter Interface*, SC30-3588
 - *IBM Token-Ring Network Problem Determination Guide*, SX27-3710
-

PREFACE.3.7 Operating System/2 (OS/2) and Programmable Workstations

- *IBM 5494 and OS/2 Extended Services: Connecting Remote User Groups with AS/400*, GG24-3828
 - *IBM Operating System/2 Extended Edition System Administrator's Guide for Communications*, G01F-0302
 - *IBM Operating System/2 Extended Edition Communications Manager*, Z360-2786
 - *IBM Extended Services for Operating System/2 Information and Planning Guide*, G326-0161
 - *AS/400 Connection Program/400 for UNIX Environment User's Guide*, SC41-0179
 - *Client Access/400 DOS Setup*, SC41-3556
 - *Client Access/400 OS/2 Setup*, SC41-3520
 - *IBM PC Support/400: DOS Installation and Administration Guide*, SC41-0006
 - *IBM PC Support/400: OS/2 Installation and Administration Guide*, SC41-0007
 - *IBM Communications Manager/2 Workstation, Installation and Configuration Guide*, SC31-6174
-

PREFACE.3.8 Systems Network Architecture (SNA)

- *Systems Network Architecture Advanced Peer-to-Peer Networking Architecture Reference*, SC30-3422
 - *Systems Network Architecture Formats*, GA27-3136
 - *Systems Network Architecture LU 6.2 Reference: Peer Protocols*, SC31-6808
 - *Systems Network Architecture Technical Overview*, GC30-3073
 - *AS/400 Communications: Advanced Peer-to-Peer Networking Support*, SC41-3407
 - *AS/400 APPN with PS/2 APPN, 3174 APPN, 5394 and Subarea Networking*, GG24-3717
 - *S3/X and AS/400 APPN Nodes Using the SNA/LEN Subarea Network*, GG24-3288
-

CHANGES Summary of Changes

Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

Subtopics:

- [CHANGES.1 Sixth Edition \(November 1996\)](#)
-

CHANGES.1 Sixth Edition (November 1996)

This manual supports the IBM 5494 Remote Control Unit Release 3.2.

Release 3.2 of the 5494 provides the following changes that affect the maintenance of the 5494:

- | The 5494 Frame Relay Token-Ring (FR-TR) Bridge Feature is available.
| The 5494 operates as a bridge and forwards such protocols as IP and
| IPX over the Frame Relay "virtual LAN." This feature consists of two
| FR-TR Bridge System Diskettes and requires the installation of the
| 5494 Memory Expansion Feature.
 - | The 5494 Memory Expansion Feature is available. It consists of an
| additional 2 MB of memory and installation instructions.
 - | The 5494 Utility Program can be run with DOS/V (Japan).
 - | You can configure the 5494 to use the permanent (Universal) address on
| the 5494 LAN card.
 - | You can configure the 5494 to set its date and time to the same date
| and time used by the primary AS/400 system. This is useful in
| coordinating error messages. The 5494 date and time is reset when the
| controller is varied on.
 - | You can use the 5494 Utility Program to create a backup configuration.
| When this configuration is placed on the 5494 system diskette and the
| diskette used to power on the controller, the backup configuration is
| used instead of the configuration in permanent storage.
 - | Continued operation of the 5494 is possible after experiencing
| twinaxial cabling problems (error code 152). You can press **Enter** on
| the 5494 Keypad, type **1** to select normal operations when message
| **1002-05|.....0** appears, and press **Enter** a second time. The 5494 will
| activate in normal mode and log any twinaxial errors as they occur.
 - | Support has been added for LAN printers.
-

1.0 Topic 1. Introduction

This topic contains the following information:

- How to use this book

- General information about the IBM 5494 Remote Control Unit (hereafter referred to as the 5494)
- A description of problem determination and maintenance for the 5494.

Subtopics:

- [1.1 How to Use This Book](#)
 - [1.2 General Product Information](#)
 - [1.3 Error Information](#)
-

1.1 How to Use This Book

This book contains the information you need to isolate and repair failures in the 5494. If you need a general introduction to the 5494, begin with "[General Product Information](#)" in topic 1.2.

If you do not need an introduction to the 5494, begin with [Topic 2, "Maintenance Analysis Procedures \(MAPs\)," beginning at "MAP 0100: Start of Call," to diagnose](#) failures. From [Topic 2](#), you will be directed to other topics to complete the task. Use [Topic 8, "Parts Catalog," to get the information you](#) need to order replacement parts.

1.2 General Product Information

The 5494 supports synchronous data link control (SDLC), X.21, X.25, Token-Ring, Ethernet, and Frame-Relay protocols with communication speeds up to 19.2 Kbps when using EIA 232D, V.24, or V.28 interfaces, and speeds up to 128 Kbps when using X.21 or V.35 interfaces. Both 4-Mbps and 16-Mbps token-ring speeds are supported; for Ethernet, 10 Mbps is supported.

The 5494 acts as an editing controller for a nonprogrammable workstation (NWS). It processes keystrokes and fields locally without communicating with the Application System/400 (AS/400) system, thus improving response time for processing keystrokes and providing feedback to the operator.

| For a programmable workstation (PWS) or a LAN-attached printer, the 5494
| manages the exchange of information between the PWS and the AS/400 system
| over the communication network and allows multiple LAN-attached devices to
| share one communication line to the AS/400 system.

| Using the 5494 Frame Relay Token-Ring Bridge Feature, the 5494 bridges
| protocols such as IP or IPX from a token-ring attached PWS over a frame
| relay network. The bridge partner receiving these frames can be an AS/400
| or another bridge such as the IBM 6611, 2217, or PS/2 running
| RouteXpander/2. Any protocols supported by the bridge partner can be
| used.

The 5494 provides:

- (Offline) extended diagnostics that test all internal hardware components and automatically wrap and test 5494 communication cables. See "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2.
- (Online) concurrent mode that displays 5494 internal information. This information can be accessed at the 5494 operator panel, a PWS, or an NWS. See [Topic 6, "Concurrent Mode from the Operator Panel or Utility Program,"](#) and [Topic 7, "Concurrent Mode from an NWS \(Online\)"](#) for more information.

The 5494, now available in only one model, can connect up to 56 twinaxial workstations (seven workstations per port) if the Twinaxial Expansion Kit is installed. The 5494 communicates with an AS/400 system that is running Operating System/400 (OS/400) Version 2 Release 1 (Modification 1) or higher. OS/400 Version 2 Release 3 or higher is required for 56-device support. The workstations can be connected to the 5494 using twinaxial cabling, the IBM Cabling System, or telephone-twisted pair (TTP) cable using the IBM 5299 Terminal Multiconnector Model 3. Both analog and digital communication networks are supported. [Figure 1](#) is an example of this support.

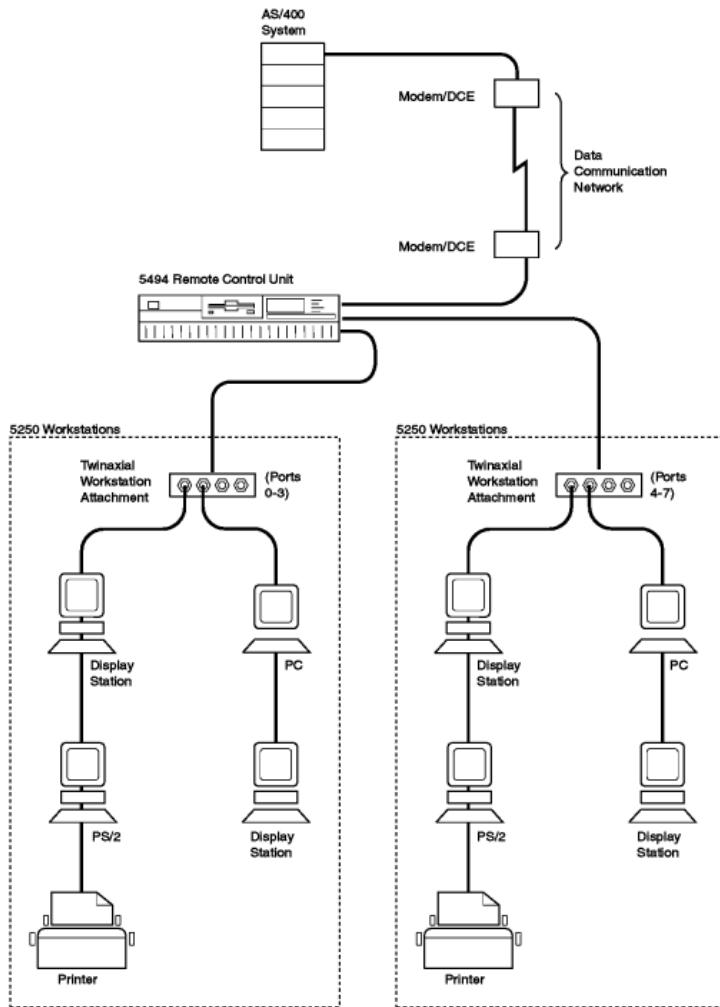


Figure 1. Example of a 5494 AS/400 Attachment Configuration

In addition to the configurations listed previously, the 5494 supports attachment to a LAN. The LAN can be either Token Ring or Ethernet and the 5494 can attach to one or the other, but not both. The Token-Ring Upgrade Kit or the Ethernet Upgrade Kit allows for one of the following LAN configurations:

- LAN Gateway configuration

This configuration allows connection of a maximum of 80 downstream workstations (56 of which can be attached to twinaxial ports).

[Figure 2](#) is an example of this configuration.

- LAN AS/400 system attachment configuration

This configuration allows connection of a 5494 to an AS/400 system through a LAN. A maximum of 56 workstations can be attached to twinaxial ports.

[Figure 3](#) is an example of this configuration.

The Twinaxial Expansion Kit provides additional twinaxial ports by adding a second twinaxial adapter in the 5494 to support an additional 28 twinaxial workstations. This Twinaxial Expansion Adapter supports four additional twinaxial ports, for a total of 56 twinaxial devices.

| The 5494 Frame Relay Token-Ring Bridge Feature requires an additional 2MB (megabytes) of memory for the 5494. This memory is available as the 5494 Memory Expansion Feature. The FR-TR Bridge Feature on the FR-TR Bridge System Diskette bridges frames from token-ring-attached PWSs over the frame relay network.

| The Twinaxial Expansion Kit, Token-Ring Upgrade Kit, Frame Relay Token-Ring Bridge Feature, Memory Expansion Feature, and Ethernet Upgrade Kit are features and must be purchased separately.

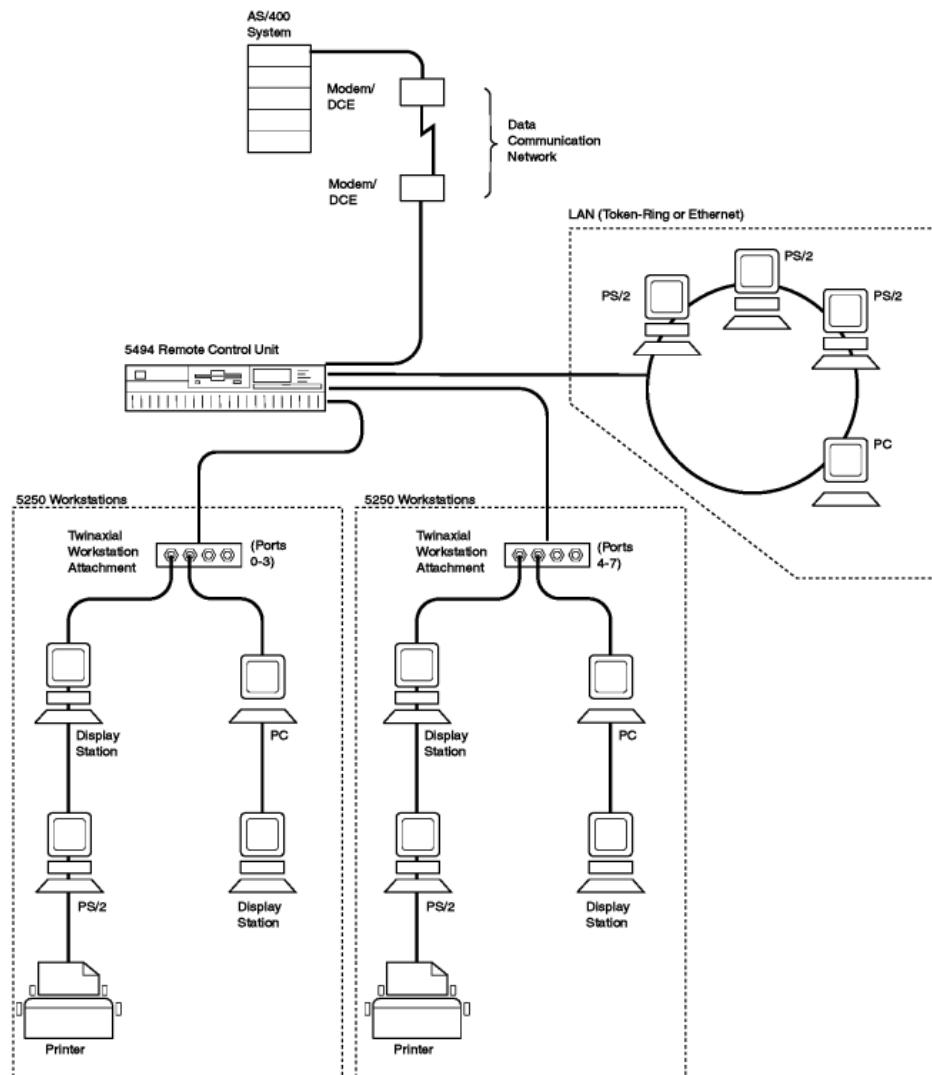


Figure 2. Example of a 5494 LAN Gateway Configuration

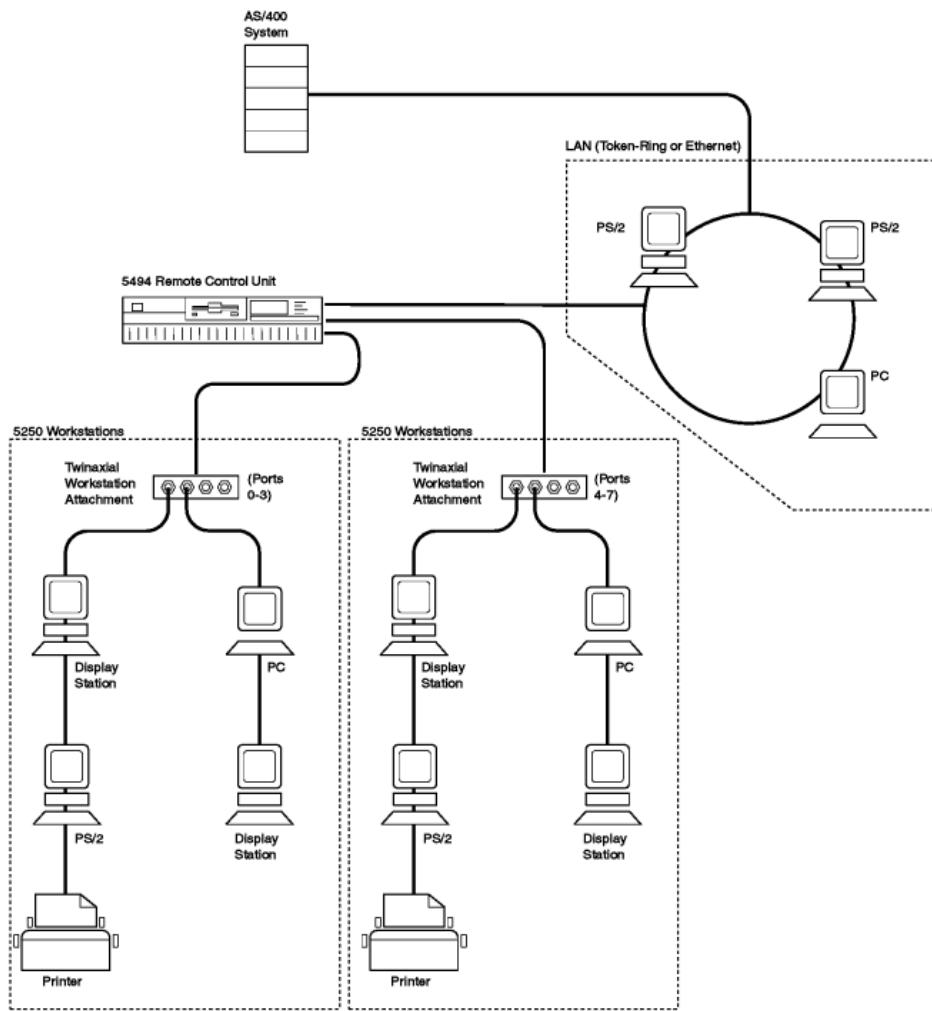


Figure 3. Example of a 5494 LAN AS/400 Attachment Configuration

The 5494 can be configured to communicate concurrently with up to four AS/400 systems over a single physical link. Concurrent host attachment, as it is called throughout this manual, permits NWSs and printers to communicate with different AS/400 systems within the communication network without using AS/400 display station or printer passthrough functions. PWSs attached to a 5494 have always had this ability.

Concurrent host attachment uses the SNA session level routing capabilities of an APPN network or SNA subarea network to reach multiple AS/400 systems in the network. [Figure 4](#) is an example of this configuration.

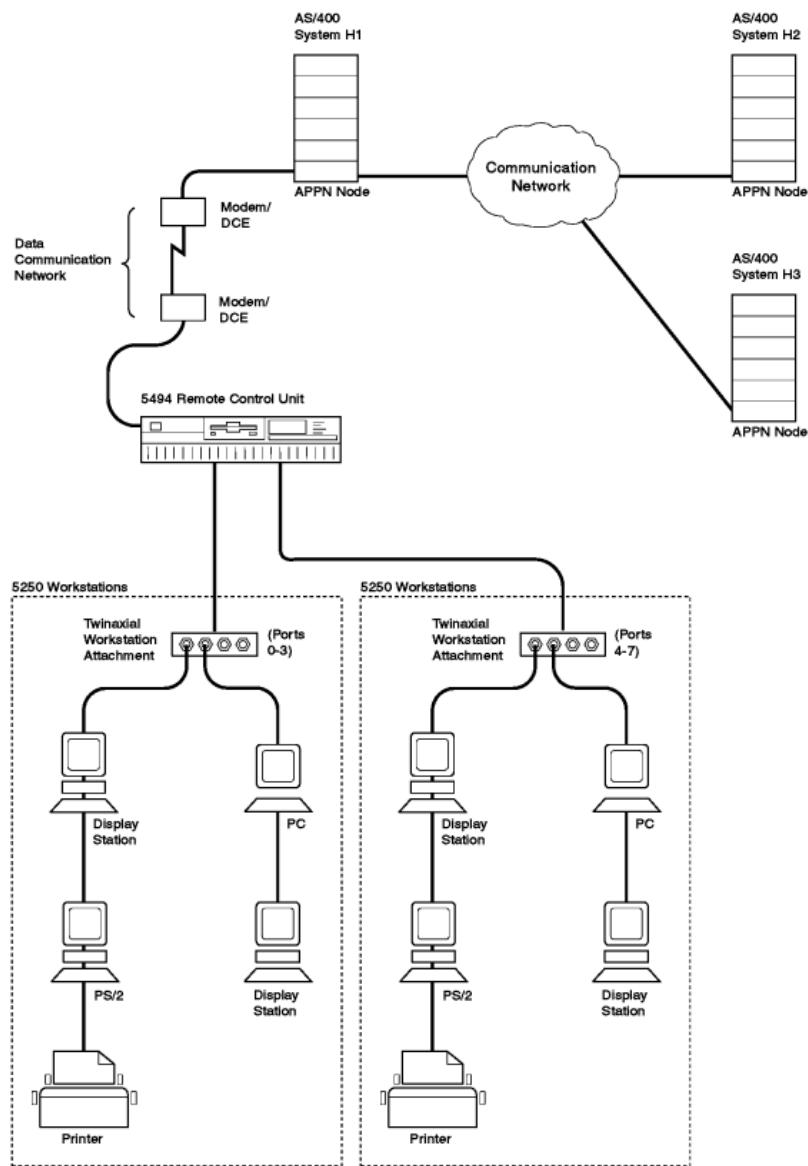


Figure 4. Example of a 5494 Concurrent Host Attachment

Subtopics:

- [1.2.1 Front and Back of the 5494](#)
- [1.2.2 5494 FRUs](#)
- [1.2.3 5494 Operator Panel Components](#)
- [1.2.4 LCD Description](#)
- [1.2.5 Codes Displayed on the LCD](#)
- [1.2.6 Keypad Description](#)
- [1.2.7 LED Descriptions](#)
- [1.2.8 Diskette Drive](#)
- [1.2.9 Diskettes](#)
- [1.2.10 Diskette Replacement](#)
- [1.2.11 Beeps that Occur during Power-On](#)
- [1.2.12 5494 Software Configuration](#)
- [1.2.13 Viewing the 5494 Configuration](#)

1.2.1 Front and Back of the 5494

This section contains figures that will help you locate the 5494 liquid crystal display (LCD), light-emitting diodes (LEDs), field replaceable units (FRUs), and cable connectors.

[Figure 5](#) shows the front and back of the 5494 and identifies the LCD, LEDs, power push button, and cable connections that you may need to locate.

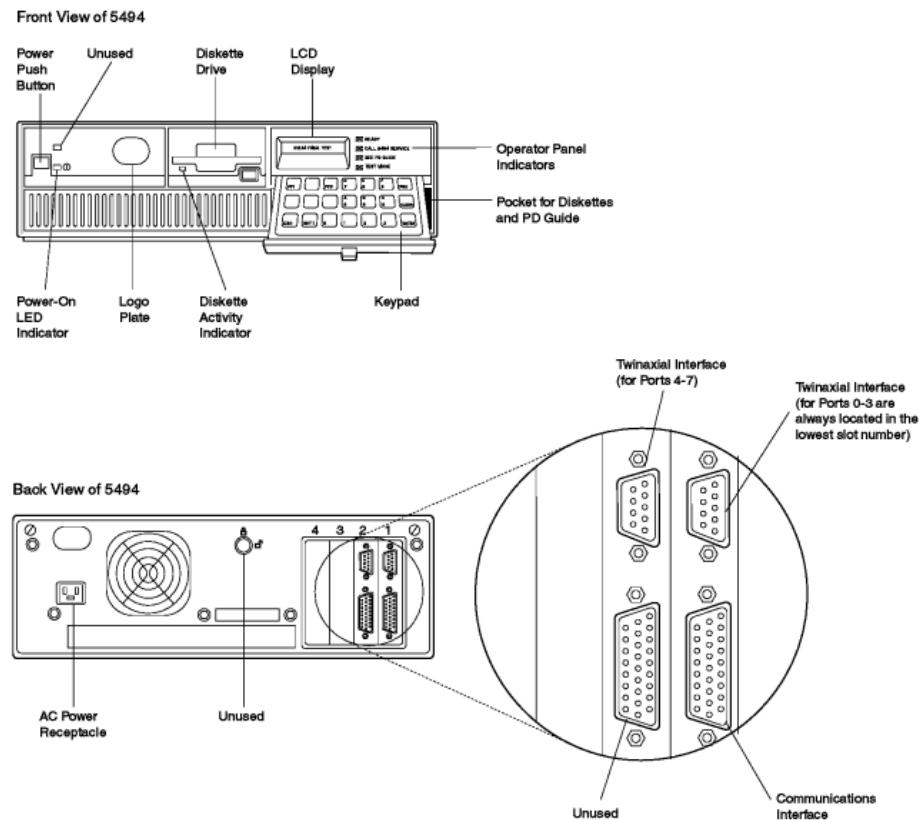


Figure 5. Front and Back of the 5494 with the Twinaxial Expansion Kit Installed

1.2.2 5494 FRUs

[Topic 5, "Removal and Replacement Procedures."](#) contains removal and replacement procedures for the following 5494 FRUs:

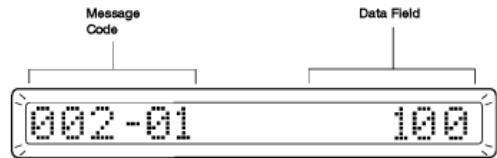
- Cover
- Host-twinaxial adapter and Twinaxial Expansion Kit
- Token-Ring adapter
- Ethernet adapter
- Power push button and speaker assembly
- Diskette drive
- Operator panel
- Single inline memory module (SIMM)
- Power supply
- Planar.

1.2.3 5494 Operator Panel Components

The operator panel is located on the right-hand front side of the 5494 and consists of a keypad, an LCD, and four LEDs (Ready, Call 5494 Service, See PD Guide, and Test Mode) that indicate operating status. An 8051 microprocessor controls the LCD, LEDs, and the keypad. Communications between the planar and the operator panel are through a serial port.

The following sections describe the 5494 LCD, keypad, and LEDs.

1.2.4 LCD Description



The LCD has 16 character positions. It is blank and displays a cursor in the rightmost position when not in use. When the 5494 operator panel is in use, there will always be a message code (002-01 in the above example) displayed on the left-hand side of the LCD. The message codes are described in ["Message Codes" in topic 3.1](#). When the 5494 is in use, the LCD can also contain, in the data field on the right-hand side of the LCD, a system reference code (SRC) or information as defined by the message code. In the example, the data field contains an SRC.

If an error occurs before or during normal operation, both a message code and an SRC will be displayed on the LCD and an LED will be lit. If more than one error occurs during normal operation, the message codes and SRCs will cycle at 3-second intervals. If the error clears (a link is established after a failure, for example), the message code and SRC will be removed from the LCD by the 5494.

1.2.5 Codes Displayed on the LCD

The codes that are displayed on the LCD are used to determine the condition of the 5494 hardware and software and can be displayed as the result of an error or a request for information. [Topic 3, "5494 Message Codes and System Reference Codes \(SRCs\)." contains the 5494 message codes and SRCs that can be displayed.](#)

Note: If you are viewing requested information, when finished you should always press Esc to clear the LCD. If an error occurs while you are viewing requested information, the Call 5494 Service or See PD Guide LED will be lit to indicate that an error exists.

1.2.6 Keypad Description

The keys on the keypad allow commands to be entered and sent to the 5494, and include:

Req

Initiates a request function

PF1

Used for special requests

PF2

Used for special requests

Esc

Used to cancel a request

Alt

Enables the alternate hexadecimal values of keys 4 through 9, to be used with keys PF1, PF2, and Esc for additional special functions.

Enter

Signals to the 5494 the end of an input string

Clear

Clears a value being entered and allows you to begin again

0 to 9

Numerics 0 to 9

Alt+4

Hexadecimal A

Alt+5

Hexadecimal B

Alt+6

Hexadecimal C

Alt+7

Hexadecimal D

Alt+8

Hexadecimal E

Alt+9

Hexadecimal F

Up arrow

Used to scroll up through several choices or panels of data

Down arrow

Used to scroll down through several choices or panels of data

Left arrow

Used to move the cursor left or scroll to additional fields of data

Right arrow

Used to move the cursor right or scroll to additional fields of data.

1.2.7 LED Descriptions

There are six LEDs on the front of the 5494: the Power On LED, the Diskette Activity LED, and the four operator panel LEDs. The following list describes each LED.

Power On

When this green LED is on, it indicates that the 5494 is receiving power.

Diskette Activity

LED When this amber LED is on, it indicates that the 5494 is reading or writing to the diskette in the diskette drive.

Attention: Do not remove the diskette from the diskette drive or turn the 5494 power **OFF (0)** while the diskette activity LED is on.

Ready

When this green LED is on, it indicates that the 5494 has successfully completed a power-on self-test (POST), has loaded its code, and is ready for operation.

Call 5494 Service

When this amber LED is on, it indicates that the 5494 has detected a problem, has isolated the problem to the 5494, and that 5494 service should be called. The LCD displays additional information to define the problem.

See PD Guide

When this amber LED is on, it indicates an error condition that cannot be immediately isolated to the 5494. The customer may or may not need to do additional problem determination to isolate the failing element and determine which service vendor to call. The LCD displays additional information to define the problem.

Test Mode

When this amber LED is on, it indicates one of the following conditions:

- If the Ready LED is off, the 5494 is running tests.
- If the Ready LED is on, the 5494 is in configuration mode or concurrent mode information can be viewed from a workstation.

1.2.8 Diskette Drive

The diskette drive allows the 5494 to load information stored on the system diskette into the 5494 storage. It also allows the 5494 to copy error and configuration information to the system diskette.

The diskette drive has a diskette-eject button and one LED.

The diskette activity LED comes on when the diskette drive is running. The diskette-eject button is used to eject the diskette from the diskette drive for removal.

1.2.9 Diskettes

Four 3.5-inch diskettes are shipped with the 5494:

- One 5494 System Diskette and one backup copy of the 5494 System Diskette

Keep the backup copy of the 5494 System Diskette with an *IBM 5494 Remote Control Unit Problem Determination Guide Quick Reference* in the front pocket of the 5494.

- One 5494 Utility Program diskette for Disk Operating System (DOS)

- One 5494 Utility Program diskette for Operating System/2 (OS/2)

| **Note:** The Frame Relay Token-Ring Bridge Feature includes two 5494
| FR-TR Bridge System Diskettes. They are used in place of the base
| 5494 System Diskettes when configured for the bridge. The 5494
| Utility Program diskettes are the same whether the feature is used or
| not.

1.2.10 Diskette Replacement

To order replacement diskettes for the 5494:

- Inside the U.S.

Make sure that you have the serial number of your 5494 available. Call 1-800-334-1089.

- Outside the U.S.

Make sure that you have the serial number of your 5494 available. Contact your local IBM branch office.

Note: Replacement system diskettes can be used immediately with the 5494. You do not need to copy your configuration data to a new diskette.

1.2.11 Beeps that Occur during Power-On

The 5494 uses beeps during power-on to help indicate if the 5494 is correctly installed and functioning, if there are hardware problems, or if there is a 5494 system setup problem. The following list describes the meaning of the beeps:

1 beep

Indicates that no problems have been detected during the POST.

2 beeps

Indicates that a problem has been detected.

A message code will be displayed on the LCD (if possible) indicating the type of problem. If the problem does not prevent the POST from continuing, the POST will wait for input from the operator panel keypad.

3 beeps

Indicates that either the operator panel or the planar is defective and must be replaced.

1.2.12 5494 Software Configuration

The first time the 5494 power is turned **ON** (!), the 5494 searches for configuration data in storage. If it does not find configuration data in storage, the 5494 searches for configuration data on the system diskette. If that data has not been changed since the diskette was manufactured, the 5494 automatically enters configuration mode, thus allowing the configuration information to be entered.

The 5494 supports three methods of entering the configuration information:

- Using the 5494 Utility Program on a personal computer (PC), Personal System/2 (PS/2) computer, or Personal System/55 (PS/55) computer. If the Utility Program is being operated in interactive mode, the configuration files can be sent to the 5494 directly from the computer. Otherwise, it is stored on diskette.
- Using the keypad and the LCD on the operator panel. A configuration file previously created on diskette can be copied to 5494 storage.
- Using a 5250 NWS attached to the 5494.

Each method of configuration is explained in the *IBM 5494 Remote Control Unit User's Guide*.

If a new system diskette is installed in the 5494's diskette drive and valid configuration data is in storage, the 5494 copies the configuration data from storage onto the new system diskette, automatically creating a backup.

If the 5494's power is **ON** (!) and the configuration data in storage is bad, for example, the 5494 uses the backup configuration file on the system diskette to operate and displays a message code on the LCD indicating that the 5494's storage is defective.

| **Note:** If the 5494 is configured with an incompatible configuration, the
| 5494 enters configuration mode to allow you to enter the correct
| information when you first power **ON** (!) the 5494 with the 5494 FR-TR
| Bridge System Diskette.

1.2.13 Viewing the 5494 Configuration

You can **view** configuration information using any of the following methods:

- Using the LCD on the operator panel. See "[Concurrent Mode from the Operator Panel \(Online\)](#)" in topic 6.2.
 - Using a 5250 NWS attached to the 5494. See [Topic 7, "Concurrent Mode from an NWS \(Online\)"](#).
 - Using the 5494 Utility Program on a PC or PS/2 computer. To view the configuration information, the computer must be communicating with the 5494. See "[Concurrent Mode Using the 5494 Utility Program](#)" in topic 6.3.
-

1.3 Error Information

Two error logs are kept to record errors that occur on the 5494 and all attached workstations:

- The 5494 error log
- The error log buffer

The contents of the error log buffer are transmitted to the AS/400 system and stored there when the error log buffer is full, and at the end of each session.

Communication error counters and statistical counters are also kept by the 5494 and transmitted to the AS/400 system. See "[Statistical Counters \(6E and 6F\)](#)" in topic B.10, "[Communication Error and Statistical Counters](#)" in topic B.10.1, and "[Displaying 5494 LAN Gateway Statistical Counters](#)" in topic 6.2.10 for more information.

Subtopics:

- [1.3.1 Displaying 5494 Error Information](#)
 - [1.3.2 Problem Determination and Repair](#)
-

1.3.1 Displaying 5494 Error Information

You can display 5494 error information at the 5494 operator panel, an NWS, or a PWS. See "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2, Topic 6, "[Concurrent Mode from the Operator Panel or Utility Program](#)," Topic 7, "[Concurrent Mode from an NWS \(Online\)](#)," and Appendix B, "[Online Diagnostics and Test Information](#)" for more information.

1.3.2 Problem Determination and Repair

If the Call 5494 Service LED on the 5494 is on, the customer records the error information and contacts 5494 service. You should bring any FRUs that were indicated by the error information.

If the See PD Guide LED is lit, the customer first performs the problem determination procedures (PDPs) to determine if a problem exists. The *IBM 5494 Remote Control Unit User's Guide* and a workstation attached to the 5494 are used to perform these procedures. The customer's PDPs may produce an SRC, a message code, or a symptom. The customer should provide you with the SRC, message code, or symptom. You should confirm that the customer used the PDPs. If the PDPs indicate a 5494 failure, you should bring any FRUs that were indicated by the message codes or SRCs.

IBM 5494 Remote Control Unit Maintenance Information is designed for you (the on-site CE) to use in resolving the majority of 5494 problems quickly and efficiently. Begin all 5494 problem analysis at "[MAP 0100: Start of Call](#)" in topic 2.1.1 and continue as directed from that point.

The following information is described in this book to aid you in on-site problem isolation:

- Power-on diagnostics
- (Offline) extended diagnostics
- (Online) concurrent mode
- Online (AS/400 system) tests
- Cable signal quality check and other service aids.

When you complete the FRU replacement, use "[Verifying 5494 Operation](#)" in topic 4.3 to verify that the 5494 is repaired and operating correctly.

If you cannot resolve the problem using this book, request technical assistance. The problem may require special tools or procedures that are available only through the service support structure.

Attention: Do not stack another 5494 or any electrical equipment directly on top of the 5494. This could result in intermittent errors during operation.

2.0 Topic 2. Maintenance Analysis Procedures (MAPs)

Subtopics:

- [2.1 Using the MAPs](#)
-

2.1 Using the MAPs

These MAPs are designed for use with [Topic 4, "5494 Verification Procedures."](#) Definitions of terms and abbreviations that are not common, but are used in the MAPs, are in the glossary of this book.

When you use the MAPs, you must:

- Read carefully. The MAPs produce reliable results only if you follow instructions and answer the questions accurately.
- Follow the sequence. Always perform the procedure one step at a time. Some steps have additional information that pertains to that step.
- Follow the instructions. Carry out the instructions exactly and in sequence. Questions rely on instructions given immediately before the questions. Do not change the conditions resulting from the instructions before you answer the questions.

Subtopics:

- [2.1.1 MAP 0100: Start of Call](#)
 - [2.1.2 MAP 0200: Twinaxial Workstation MAP](#)
 - [2.1.3 MAP 0300: Power Problem](#)
 - [2.1.4 MAP 0400: Diskette Drive Problem](#)
 - [2.1.5 MAP 0500: Twinaxial Cabling \(Port Tester\)](#)
 - [2.1.6 MAP 0600: Twinaxial Cabling \(Resistance Measurements\)](#)
 - [2.1.7 MAP 0700: IBM Cabling System \(Resistance Measurements\)](#)
 - [2.1.8 MAP 0800: Performing Twinaxial Cable Diagnostics](#)
-

2.1.1 MAP 0100: Start of Call

Before beginning, record all symptoms reported by the customer. If the 5494 is powered on, record any failure indications that you observe at the operator panel and the workstation screen.

| 001 |
|_____|

System reference codes (SRCs) are displayed on workstations and sometimes on the 5494 operator panel LCD. On a workstation, SRCs are composed of 3 to 6 alphanumeric characters that blink and are located in the upper left or right corner, or the lower left corner of the screen. The 5494 displays 3- to 6-character SRCs on the right-hand side of the operator panel LCD.

Is an SRC displayed on any workstation?

Yes No

|
|
| 002 |
|_____|

Go to [Step 004](#).

| 003 |

Look up the SRC in ["SRCs" in topic 3.2](#) and perform the indicated action.

| 004 |

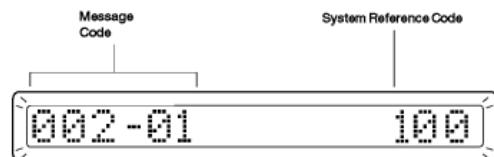
(From step 002)

Go to the 5494.

- Message codes are composed of 3 numbers, sometimes followed by a dash and 2-digit qualifier, that are displayed on the left-hand side of the 5494 LCD.

Note: If the LCD is **not** blank with a cursor in the rightmost position, press Esc on the keypad to clear any requested information that is not an error.

Is a message code displayed on the left-hand side of the LCD?



Yes **No**

| 005 |

Go to [Step 007](#).

| 006 |

Look up the message code in [Topic 3, "5494 Message Codes and System Reference Codes \(SRCs\)"](#) and perform the indicated action.

| 007 |

Is the Ready LED on the 5494 operator panel on? (See ["5494 Operator Panel Components" in topic 1.2.3](#) if necessary.)

Yes **No**

| 008 |

Go to [Step 025](#).

| 009 |

Important

Be sure to note this step and topic number, and return here after

verifying workstation connection.

- First, see "[Verifying Workstation Connection](#)" in topic 4.3.2, and verify that all workstations are communicating with the 5494.

- If you encounter problems with 5250 workstations, go to [Step 010](#).
 - If you encounter problems with Token-Ring - or Ethernet-connected workstations, go to [Step 040](#).

— |010| |__|

Either the problem no longer exists or you have taken an incorrect step while following this procedure. Reevaluate your problem, and then go back to [Step 001](#) if necessary.

|017||

- Perform the following steps:
 1. Turn the 5494 power **OFF**.
 2. At the 4-port end of the twinaxial workstation attachment cable, swap the cable of the port to which the failing workstations are connected with the cable of another port.
 3. Turn the 5494 power **ON**
 4. Verify the twinaxial workstation attachment cable ports again by pressing **REQ**, typing **210**, and pressing **Enter**. Use the up and down arrows to scroll through the connections.

Did the failing port change with the cable swap? Yes No ||||_ | 018| ||__| | Go to "[Twinaxial Adapter and Twinaxial Expansion Adapter Removal and Replacement](#)" in topic [5.7.2](#) and replace the host-twinaxial adapter. |||_ | 019| |_|

Are all workstations attached to this port failing? Yes No Verify the physical connection and configuration of any failing workstations to locate the failing cable. To verify the configuration, compare the customer's configuration worksheets with the 5494 configuration. Go to [Topic 6, "Concurrent Mode from the Operator Panel or Utility Program."](#) for instructions on displaying the configuration information.

Go to ["MAP 0500: Twinaxial Cabling \(Port Tester\)" in topic 2.1.5](#) to resolve the twinaxial cable problem.

— |022| | — |

- Make sure that:

1. The twinaxial workstation attachment cable is connected securely to the 5494.
 2. The 5250 workstation cables are connected securely to the 5494 twinaxial attachment cable.
 3. The cables are connected securely to the workstations.

Did you find and correct any cable-attachment problem? Yes No | | | | | 023 | | | | | Go to "Twinaxial Adapter and Twinaxial Expansion Adapter Removal and Replacement" in topic 5.7.2 and replace the host-twinaxial adapter. | | | | | 024 | | |

Refer to the *IBM 5494 Remote Control Unit User's Guide* procedures for establishing communication and work with the customer to reestablish communication with the AS/400 system. Verify that the workstation is no longer failing.

| | | | | 025 | | |

- Turn the 5494 power **OFF (0)** and remove the system diskette from the diskette drive. Turn the 5494 power back **ON (1)**. Message code 001-01 should be displayed in approximately 5 seconds. Within 1 minute, a different message should be displayed on the operator panel.

Is a message code displayed on the left-hand side of the LCD? Yes No | | | | | 026 | | | | | Go to Step 034. | | | | | 027 | | |

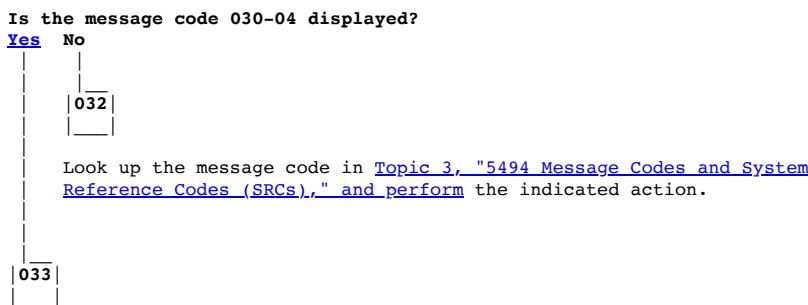
Is the message code 003-02 displayed on the left-hand side of the LCD? Yes No | | | | | 028 | | | | | Look up the message code in Topic 3, "5494 Message Codes and System Reference Codes (SRCs)." to determine the next action. | | | | | 029 | | |

- Insert the system diskette in the diskette drive. At the operator panel keypad, type **0**, and then press **Enter**. The 5494 will load extended diagnostics. See "5494 Extended Diagnostics Flow" in topic 4.1 if necessary.

Is the message code 020-01 displayed on the LCD? Yes No | | | | | 030 | | | | | Look up the message code in Topic 3, "5494 Message Codes and System Reference Codes (SRCs)," and perform the indicated action. | | | | | 031 | | |

- At the operator panel, press and hold **Alt** and press **PF1** to access the CE main menu. When message code 030-01 is displayed, type **2** and then press **Enter**. Extended diagnostics will begin. Message codes such as 031-01, 032-01, and 033-01 will be displayed as the tests are run. Manual intervention (for example, removing the diskette from the diskette drive) will be required for some tests. A message code on the LCD will indicate the action that is required. See Topic 3, "5494 Message Codes and System Reference Codes (SRCs)," to determine the required action. Remember to return to this step to finish the procedure.

After a few minutes a final message code will be displayed.



End of procedure. Extended diagnostics failed to detect a problem.

Display the 5494 error log. To do this, press **Enter** to return to the main menu. Then, type **6** and press **Enter**. Refer to "How to View the Error Log from Extended Diagnostics" in topic 3.1.1.

| | | | | 034 | | |

- The 5494 is receiving power if any LED on the 5494 is on or a fan in the 5494 is running.

Is there any indication that the 5494 is receiving power?

Yes	No
035	
Go to Step 037.	

| 036 |
There is a problem with the operator panel or planar. Go to "Operator Panel Removal and Replacement" in topic 5.7.7 and replace the operator panel. If the problem reoccurs, reinstall the operator panel, and then go to "Planar Removal and Replacement" in topic 5.7.10 and replace the planar.

| 037 |
|_____|

Is the 5494 power cord plugged into the power outlet?

Yes No

| 038 |
|_____|

|| DANGER

Never work on equipment, or connect or disconnect signal cables during periods of lightning activity.

|| Note: For a translation of this safety notice, see [Appendix A, "Safety Notices."](#) |

|| Turn the 5494 power **OFF (0)**, and then plug the 5494 power cord into the power outlet. || | 039 | |____|

Make sure that power is available at the power outlet. If power is available, go to "[Power Supply Removal and Replacement](#)" in topic 5.7.9 and replace the power supply.

| 040 |
|_____|

Was the LAN (Token-Ring or Ethernet) address for all workstations displayed on the LCD?

Yes No

| 041 |
|_____|

Was the LAN address for any configured workstations displayed on the LCD?

Yes No

| 042 |
|_____|

Go to [Step 045](#).

| 043 |
|_____|

Ask the customer to contact the LAN administrator and report that a workstation is not communicating with the 5494.

| 044 |
|_____|

The 5494 is communicating with the LAN workstations.

Either the problem no longer exists or you have taken an incorrect step while following this procedure. Reevaluate your problem and go back to [Step 001](#) if necessary.

| 045 |

- Check the LAN (Token-Ring or Ethernet) cable connection at the 5494 and the network.

Is the LAN cable connected securely to the 5494 and the network?

Yes No

| 046 |

Reconnect the LAN cable. Refer to the *IBM 5494 Remote Control Unit User's Guide* procedures for establishing communication, and work with the customer to reestablish communication with the AS/400 system.

| 047 |

Go to "[Token-Ring Adapter Removal and Replacement](#)" in topic [5.7.3](#) or "[Ethernet Adapter Removal and Replacement](#)" in topic [5.7.4](#) and replace the adapter or cable.

2.1.2 MAP 0200: Twinaxial Workstation MAP

| 001 |

When a workstation begins receiving polls from the 5494:

- The cursor moves from the upper right to the upper left side of the screen.
- A System Available indicator appears at the bottom of the screen. (The location and appearance of this indicator depend on the type of display you are using.)

Does at least one workstation have these indications? Yes No ||||| ____ | 002 ||| ____ ||| Is a message displayed on the 5494 LCD? | Yes No ||||||| ____ | 003 ||| ____ | ____ | Go to "[MAP 0100: Start of Call](#)" in topic [2.1.1](#). ||||| ____ | 004 ||| ____ ||| Go to [Topic 3, "5494 Message Codes and System Reference Codes \(SRCs\)"](#). Look up the message code displayed on the left-hand side of the panel. | ____ | 005 | ____ |

- Press the **Error Reset** key to clear any displayed SRC.

A failing workstation has one or more of the following conditions:

- System Available indicator off.
- Failure in free-key mode. (See "[Free-Key Mode](#)" in topic [B.2](#) for instructions.)
- An operator-reported keyboard, display, or printer problem.
- A printer displays an error code.

Do any attached workstations have one or more of these conditions? Yes No ||||_ ||006||__||| - Go to [Step 055.](#) |||_ ||007||__|

Is the System Available indicator continuously on at the failing workstation? Yes No ||||_ ||008||__||| - Go to [Step 052.](#) |||_ ||009||__|

Is the failing workstation a printer? Yes No ||||_ ||010||__||| - Go to [Step 022.](#) |||_ ||011||__|

Does the failure involve the copy-to-printer function? Yes No ||||_ ||012||__||| - Make sure that the printer is supported by the 5494. See | [Appendix C, "Supported Attachments."](#) ||| - Make sure that the address at the printer is the same as the | address in the AS/400 system configuration table. ||| If a failure is still present, there is probably a problem in the | printer. || Repair the failing printer, or report the problem to the customer for | printers that do not have IBM on-site service. |||_ ||013||__|

Is an SRC of 52XXXX displayed? Yes No ||||_ ||014||__||| See [Appendix C, "Supported Attachments."](#) ||| If the printer in question is listed as a supported device, suspect a | code problem. Contact 5494 Support for assistance. |||_ ||015||__|

Is the SRC either 520000 or 520002? Yes No ||||_ ||016||__||| **Is the SRC 520001?** | **Yes** No |||||_ ||017||__||| The print operation was interrupted by one of the following: ||| - Printer power was turned **OFF**. ||| - The printer Cancel key was pressed. ||| - There is a problem with the twinaxial cabling. Go to [Step 052.](#) |||||_ ||018||__||| The workstation designated for the copy-to-printer function is not a | printer. ||| If the failure occurs during online operation, notify the AS/400 | system operator that the address selected for the copy-to-printer | function is not correct. ||| - or - ||| If the failure occurs during local operation, change the address | selection on the CSU or Concurrent diagnostics screen. See "[5494 | Software Configuration](#)" in topic [1.2.12](#) or "[Common Data Fields](#)" in | [topic 7.2.](#) | _____ |||_ ||019||__|

Is the 5494 in session with the AS/400 system? Yes No ||||_ ||020||__||| Check for one of the following conditions: ||| - There is a problem with the twinaxial cabling. Go to [Step 052.](#) ||| - The selected printer is offline, turned **OFF**, or in an error state. |||_ ||021||__|

- Check the printer selection on the concurrent diagnostics screen.
- Check the printer at that address.

If the printer is currently in session, retry the operation after the print job finishes.

- or -

If the printer is not in session, make sure that it is turned on, and has the System Available indicator on.

If the copy-to-printer function continues to fail, go to [Step 052.](#)

- Go to "[Verifying 5494 Operation](#)" in topic [4.3.](#)

____ ||022||__| (From step 010)

When the 5494 is not in session with the AS/400 system, the 5494 should establish the free key mode with all workstations that are powered on.

- Press the **Error Reset** key to reset any errors.
- Press a series of character keys at the failing workstation.

Do any characters appear on the workstation screen? Yes No ||||_ ||023||__||| Verify that the workstation is a supported device. See [Appendix C, "Supported Attachments."](#) ||| If the workstation is listed as a supported device, the failure is in | the workstation. Repair the workstation or report the problem to the | customer for workstations that do not have IBM on-site service. ||| - Go to "[Verifying 5494 Operation](#)" in topic [4.3.](#) |||_ ||024||__|

Do the correct characters appear on the workstation screen? Yes No ||||_ ||025||__||| Turn the 5494 power **OFF (0)**. ||| - Remove the 5494 system diskette. ||| - Turn the 5494 on. After about 1 minute, the message 003-02 | appears. ||| - Insert the 5494 system diskette. Press **2** and **Enter** to select | configuration mode. See "[Message Codes](#)" in topic [3.1](#), if | necessary. ||| - See [Appendix D, "Key Sequences, and determine](#) the correct test | request key sequence for your keyboard. Enter the test request key | sequence. ||| - Get the completed Keyboard Translation Worksheet from the customer | and make sure that the keyboard code for each workstation is | correct. (Blank copies of these worksheets are in the *5494 Remote | Control Unit Planning Guide*.) ||| **Are all parameters on the CSU screen correct?** | **Yes** No |||||_ ||026||__||| - Work with the customer to correct the configuration and save ||| the new configuration. (Refer to the *IBM 5494 Remote Control | Unit User's Guide* for instructions on changing the ||| configuration.) ||| - Press the **Error Reset** key on the workstation to exit CSU mode. ||| - Turn the 5494 power **OFF (0)**. ||| - Go to "[Verifying 5494 Operation](#)" in topic [4.3.](#) |||||_ ||027||__||| - Press the **Reset** key to exit CSU mode. ||| - Refer to the workstation maintenance books. Check the scan codes | that the workstation is generating. ||| **Is the workstation generating the correct scan codes?** | **Yes** No |||||_ ||028||__||| The failure is in the attached workstation. Repair the ||| workstation or report the problem to the customer for | workstations that do not have IBM on-site service. ||| - Go to "[Verifying 5494 Operation](#)" in topic [4.3.](#) |||||_ ||029||__||| Replace the host-twinaxial adapter. See "[Twinaxial Adapter and | Twinaxial Expansion Adapter Removal and Replacement](#)" in topic [5.7.2.](#) ||| - Go to "[Verifying 5494 Operation](#)" in topic [4.3.](#) | _____ |||_ ||030||__|

Is the reported problem a self-check failure? Yes No ||||_ ||031||__||| - Go to [Step 035.](#) |||_ ||032||__|

Enter the online test mode by using the procedures in "[Online Tests](#)" in topic [B.3.](#)

- Select **Specified Input Field** on the Display Verification Menu.
- Field advance to the self-check fields.
- Type **AF127656** in the first self-check field and press **Enter**.
- Type **AF127655** in the second self-check field and press **Enter**.

Is SRC 0015 displayed after entering either self-check field number? Yes No ||||_ ||033||__||| The failure is caused by entry of the wrong check digits or by an | AS/400 system programming problem. ||| - Go to "[Verifying 5494 Operation](#)" in topic [4.3.](#) |||_ ||034||__|

Contact 5494 Support to determine if a code correction is available for this problem.

____ |035| ____| (From step 031)

Is the reported problem a magnetic stripe reader (MSR) failure? Yes No ||||| ____| |036| ||| ____| - Go to [Step 040](#). ||| ____| |037| ____|

- Pass the MSR test card through the reader while in free key mode or in the free key field of the online test Display Verification Menu.

Does the MSR test card read correctly? Yes No ||||| ____| |038| ||| ____| - Check for a failure in the workstation. || Repair the workstation or report the problem to the customer for workstations that do not have IBM on-site service. || - or - || If no failure is found, contact 5494 Support to determine if a code correction is available for this problem. || - Go to "[Verifying 5494 Operation" in topic 4.3.](#)" ||| ____| |039| ____|

The failure is caused by an operator error, a defective MSR card, or an AS/400 system programming problem.

- Go to "[Verifying 5494 Operation" in topic 4.3.](#)"

____ |040| ____| (From step 036)

Is the reported problem a light-pen failure? Yes No ||||| ____| |041| ||| ____| - Go to [Step 045](#). ||| ____| |042| ____|

- For offline operation, enter free key mode and type a line of characters at the failing workstation.

- During online operation, access the Prime Option Menu at the failing workstation and type a line of characters in the free key field of the Display Verification Menu.

- Place the tip of the light pen on any character.

The SRC 0036 should appear on the workstation screen.

- Remove the light pen from the screen.

- Press the **Error Reset** key.

- Press the **Field Exit** key.

- Place the tip of the light pen over a row of characters and slowly move it along the row.

The cursor should follow within 2 character-positions of the light-pen tip.

- Place the light-pen tip over a character and press the tip against the screen.

The SRC 0037 should appear on the workstation screen.

Were all indications correct? Yes No ||||| ____| |043| ||| ____| - Check for a failure in the workstation. || Repair the workstation or report the problem to the customer for workstations that do not have IBM on-site service. || - or - || If no failure is found, contact 5494 Support to determine if a code correction is available for this problem. || - Go to "[Verifying 5494 Operation" in topic 4.3.](#)" ||| ____| |044| ____|

The failure is caused by an operator error or an AS/400 system programming problem.

- Go to "[Verifying 5494 Operation" in topic 4.3.](#)"

____ |045| ____| (From step 041)

When using the text entry assist function, does correct operation result in an SRC between 0072 and 0078? Yes No ||||||| ____| |046| ||| ____| During normal data entry, does correct operation result in an SRC between 0000 and 0029, between 0060 and 0066, or 0071? | **Yes** No ||||||| ____| |047| ||| ____| - If the SRC is 0067, 0068, or 0069, the cause is probably an AS/400 system programming problem. |||| - or - |||| If any other SRC appears on the workstation screen, go to "[MAP ||| 0100: Start of Call" in topic 2.1.1.](#)" ||||| ____| |048| ||| ____| - Read the SRC definition. See [Topic 3, "5494 Message Codes and System Reference Codes \(SRCs\)"](#). || - If the attempted operation needs a feature installed on the workstation, make sure that the feature is installed correctly. || - Make sure that the attempted operation works correctly in free key mode. || **Does the failing operation work correctly in free key mode?** | **Yes** No ||||||| ____| |049| ||| ____| - The failure is in the attached workstation. |||| Repair the workstation or report the problem to the customer for workstations that do not have IBM on-site service. |||| - Go to "[Verifying 5494 Operation" in topic 4.3.](#)" ||||| ____| |050| ||| ____| - Probable AS/400 system programming problem. || - Go to "[Verifying 5494 Operation" in topic 4.3.](#)" | _____ ||| ____| |051| ____|

Contact 5494 Support to determine if a code correction is available for this problem.

____ |052| ____| (From steps 008, 017, 020, and 021)

- Turn the 5494 power **OFF (0)**.

- Disconnect all twinaxial connectors on the 5494 twinaxial workstation attachment cable.

- Move the cable for the failing workstation to a different port on the 5494.

- Turn the 5494 power **ON (I)**.

Is the System Available indicator on the failing workstation on now (not blinking)? **Yes** No | | | | | 053 | | | | | - Reconnect the cabling in the original configuration. || Either an attached workstation is failing or the cable from the 5494 to the workstation is defective. || If twinaxial or telephone twisted-pair cable is used, go to "[MAP 0600: Twinaxial Cabling \(Resistance Measurements\)](#)" in topic 2.1.6. || - || If IBM Cabling System is used, go to "[MAP 0700: IBM Cabling System \(Resistance Measurements\)](#)" in topic 2.1.7. || | | | | 054 | | |

Replace the host-twinaxial adapter. See "[Twinaxial Adapter and Twinaxial Expansion Adapter Removal and Replacement](#)" in topic 5.7.2.

- Go to "[Verifying 5494 Operation](#)" in topic 4.3.

| | | | | 055 | | | (From step 006)

When the 5494 fails to communicate correctly with the AS/400 system, a message code and SRC will be displayed on the LCD. Look up the message code beginning in topic 3.1 and attempt to correct the problem.

Then, attempt to establish communication with the AS/400 system.

To determine whether AS/400 system communication to the 5494 is active, at the 5494 operator panel, press **Req**, type **200**, and press **Enter**. The following will be displayed: 200 | | 1 "2"3 4 "5"

The arrow next to the 1 represents the status of the ALS and the arrow next to the 4 represents the status of the AS/400 system.

- If the link is active, " " will be displayed.
- If it is down, " " will be displayed.

Is the 5494 failing to communicate with the AS/400 system? **Yes** No | | | | | 056 | | | | | End of call. || | | | | 057 | | |

Go to "[MAP 0100: Start of Call](#)" in topic 2.1.1.

2.1.3 MAP 0300: Power Problem

Attention:

Remove the diskette from the 5494 before using this MAP. Reinsert the diskette after the voltage problem is corrected.

CAUTION:

Switch the power OFF (0) before removing cables.

| 001 |
| |

- Turn the 5494 power **ON** (|).

The Power LED should come on.

Is the Power LED lit?

Yes **No**

| 002 |
| |

- Go to [Step 004](#).

| 003 |
| |

- Go to [Step 011](#).
-

|004|

|_|
(From step 002)

The ac power might be failing.

- Check for ac power at the 5494 end of the power cord.

Is ac power present?

Yes No

|005|

|_|
Check for ac power at the source where the 5494 is plugged in.

Is ac power present at the source?

Yes No

|006|

- Notify the customer that there is a power problem.

- End of call.

|007|

- Replace the power cord.

- Go to "[Verifying 5494 Operation](#)" in topic 4.3.

- End of call.

|008|

|_|

- Turn the 5494 power **OFF (0)** and remove the cover. See "[Cover Removal and Replacement](#)" in topic 5.7.1.

- Check the continuity of the power push button wires in the power push button/speaker cable. Pins 3 and 8 should connect to the left and center pins, respectively, on the power push button connector.

Is the cable good?

Yes No

|009|

- Replace the power push button and speaker cable. See "[Power Push Button and Speaker Assembly Removal and Replacement](#)" in topic 5.7.5.

- Go to "[Verifying 5494 Operation](#)" in topic 4.3.

|010|

|_|

- Go to [Step 011](#).

|011|

|_|

(From steps 003 and 010)

- Turn the 5494 power **ON** (|).
- Measure the voltages from the power test points on the planar-to-chassis ground. See the illustration of the planar in topic [5.2.5](#) to locate the power test points.

Are all voltage levels present?

Yes No

| 012 |

- Turn the 5494 power **OFF** (0) and disconnect the power cord.
- Remove the power supply. See "[Power Supply Removal and Replacement](#)" in topic [5.7.9](#).
- Place the power supply next to the 5494 and attach the connectors from the power supply to the planar.
- Measure the resistance from P16 (on the planar) pin 2 to ground with the power push button first set **ON** (|), and then **OFF** (0). When on, resistance should be less than 0.1 ohm. When off, resistance is infinite.

Is the resistance measurement as specified?

Yes No

| 013 |

- Replace the power push button and speaker assembly. See "[Power Push Button and Speaker Assembly Removal and Replacement](#)" in topic [5.7.5](#).
- Go to "[Verifying 5494 Operation](#)" in topic [4.3](#).

| 014 |

- Replace the power supply. See "[Power Supply Removal and Replacement](#)" in topic [5.7.9](#).
 - Go to "[Verifying 5494 Operation](#)" in topic [4.3](#).
-

| 015 |

See the illustration of the planar in topic [5.2.5](#) to locate the power test points. Power supply outputs should be within the following tolerances:

+ 5 test point to ground	+ 5.25	to + 4.82 V dc
- 12 test point to ground	- 13.20	to - 10.92 V dc
+ 12 test point to ground	+ 12.60	to + 11.52 V dc

Is any voltage level out of tolerance?

Yes No

| 016 |

- Turn the 5494 power **OFF** (0).
- Replace the planar. See "[Planar Removal and Replacement](#)" in topic [5.7.10](#).
- Go to "[Verifying 5494 Operation](#)" in topic [4.3](#).

| 017 |

- Turn the 5494 power **OFF (0)**.
- Disconnect the diskette drive cable from the planar. See "[Diskette Drive Removal and Replacement](#)" in topic [5.7.6](#).
- Turn the 5494 power **ON (|)**.
- Measure the voltages from the planar test points to the chassis ground. See the illustration of the planar in topic [5.2.5](#) to locate the power test points.

Are any voltages still out of tolerance?

Yes **No**

018

- Turn the 5494 power **OFF (0)**.
- Replace the diskette drive. See "[Diskette Drive Removal and Replacement](#)" in topic [5.7.6](#).
- Go to "[Verifying 5494 Operation](#)" in topic [4.3](#).

019

- Reconnect the diskette drive cable.
- Remove the SIMM from the planar. See "[SIMM Removal and Replacement](#)" in topic [5.7.8](#).
- Turn the 5494 power **ON (|)**.
- Measure the voltages from the planar test points to the chassis ground. See the illustration of the planar in topic [5.2.5](#) to locate the power test points.

Are any voltages still out of tolerance?

Yes **No**

020

- The SIMM is failing.
- Turn the 5494 power **OFF (0)**.
 - Replace the SIMM. See "[SIMM Removal and Replacement](#)" in topic [5.7.8](#).
 - Go to "[Verifying 5494 Operation](#)" in topic [4.3](#).

021

- Turn the 5494 power **OFF (0)**.
- Reinstall the SIMM module in **slot 1**.
- Remove the operator panel and cable. See "[Operator Panel Removal and Replacement](#)" in topic [5.7.7](#).
- Turn the 5494 power **ON (|)**.
- Measure the voltages from the planar test points to the chassis ground. See the illustration of the planar in topic [5.2.5](#) to locate the power test points.

Are any voltages still out of tolerance?

Yes **No**

| 022 |

- Turn the 5494 power **OFF (0)**.
- Replace the operator panel. See "[Operator Panel Removal and Replacement](#)" in topic [5.7.7](#).
- Go to "[Verifying 5494 Operation](#)" in topic [4.3](#).

| 023 |

- Turn the 5494 power **OFF (0)**.
 - Reconnect the operator panel cable.
 - Replace the power supply. See "[Power Supply Removal and Replacement](#)" in topic [5.7.9](#).
 - Go to "[Verifying 5494 Operation](#)" in topic [4.3](#).
-

2.1.4 MAP 0400: Diskette Drive Problem

Symptom Explanation	Conditions That Could Cause This Symptom
A diskette error code is displayed in the LCD.	<ul style="list-style-type: none">° The diskette is write-protected or damaged.° The diskette drive or signal cable is failing.° The planar is failing.

| 001 |

- Make sure the write-protect tab on the **backup** diskette is closed.
- Insert the **backup** diskette and turn the 5494 power **ON (|)**.

Did the Ready LED come on?

[Yes](#) [No](#)

| 002 |

- Go to [Step 004](#).

| 003 |

End of call.

Inform the customer that the diskette is defective and recommend that a replacement diskette be ordered.

| 004 |

|_____|
(From step 002)

- Turn the 5494 power **OFF** (0).
- Remove the 5494 cover. See "[Cover Removal and Replacement](#)" in [topic 5.7.1](#).
- Turn the 5494 power **ON** (|).

Power supply output should be within the following tolerances:

+ 5 test point to ground + 5.25 to + 4.82 VDC

Is any voltage level out of tolerance?

Yes No

| 005 |
|_____|

- Go to [Step 007](#).

| 006 |
|_____|

- Go to "[MAP 0300: Power Problem](#)" in [topic 2.1.3](#).
-

| 007 |

|_____|
(From step 005)

- Turn the 5494 power **OFF** (0).
- Turn the 5494 power **ON** (|) and observe the diskette activity LED.

Does the LED come on twice and then go off again?

Yes No

| 008 |
|_____|

- Replace the planar. See "[Planar Removal and Replacement](#)" in [topic 5.7.10](#).
- Go to "[Verifying 5494 Operation](#)" in [topic 4.3](#).

| 009 |
|_____|

- Replace the diskette drive. See "[Diskette Drive Removal and Replacement](#)" in [topic 5.7.6](#).
 - Go to "[Verifying 5494 Operation](#)" in [topic 4.3](#).
-

2.1.5 MAP 0500: Twinaxial Cabling (Port Tester)

This MAP directs you to locate cable and workstation problems using the AS/400 System Port Tester. If you do not have access to a port tester, go to "[MAP 0600: Twinaxial Cabling \(Resistance Measurements\)](#)" in topic [2.1.6](#).

You can use the IBM Workstation Controller Port Tester (IBM P/N 94X2040) to isolate cabling and port problems on the 5494. The port tester is shown in [Figure 6 in topic 2.1.5.2](#).

Attach the port tester directly to one of the following components:

- A twinaxial port or cable
- A twisted-pair port or cable
- The twinaxial adapter on an IBM Cabling System.

The port tester monitors signals from the twinaxial ports on the 5494. Cables being checked must be connected to a 5494 twinaxial port.

DANGER

Do not use the port tester during electrical storms.

Note: For a translation of this safety notice, see [Appendix A, "Safety Notices."](#)

Attention: Remove and connect cables carefully. You can damage connectors if you use force.

Subtopics:

- [2.1.5.1 Twinaxial Test](#)
- [2.1.5.2 Twisted-Pair Test](#)

2.1.5.1 Twinaxial Test

1. Move the selector switch to the left (1) position.

2. Attach the appropriate port tester twinaxial connector to the port or cable you are testing, or to a twinaxial adapter attached to the port or cable you are testing.

Note: If the twinaxial plug is needed, remove the twinaxial cable from the twinaxial cable holders located on the side of the port tester.

3. Push and hold the test button for 15 seconds or until one of the following conditions occurs:

- Only the green light comes on. This indicates that the port or cable between the port tester and the 5494 is good.
- Only the yellow light comes on. This indicates that the wires in the cable are reversed somewhere between the port tester and the 5494.

- o Neither the green nor yellow light comes on. This indicates that there is no signal on the cable between the port tester and the 5494.

This can also indicate that:

- The selector switch is in the wrong position.
 - The port tester is attached to the wrong port or cable.
 - The attachment to the port or cable is not secure.
- o Both the green and yellow lights come on. This indicates that either the selector switch is in the self-test position or the port tester is not working correctly.

4. Remove the port tester connector from the cable or port you tested.

5. If the twinaxial plug was used, put the twinaxial cable back into the twinaxial cable holders.

2.1.5.2 Twisted-Pair Test

1. Move the selector switch to the right (2) position.

2. Attach the appropriate port tester twisted-pair connector to the port or cable you are testing.

Note: If you need the twisted-pair plug, remove it from the twisted-pair cable compartment located at the bottom of the port tester.

3. Push and hold the test button for 15 seconds or until one of the following conditions occurs:

- o Only the green light comes on. This indicates that the port or cable between the port tester and the control unit is good.
- o Only the yellow light comes on. This indicates that the wires in the cable are reversed somewhere between the port tester and the 5494.
- o Neither the green nor yellow light comes on. This indicates that there is no signal on the cable between the port tester and the 5494.

This can also indicate that:

- The selector switch is in the wrong position.
 - The port tester is attached to the wrong port or cable.
 - The attachment to the port or cable is not secure.
- o Both the green and yellow lights come on. This indicates that either the selector switch is in the self-test position or the port tester is not working correctly.

4. Remove the port tester connector from the cable or port you tested.

5. If you used the twisted-pair plug, put the twisted-pair cable back into the twisted-pair cable compartment.

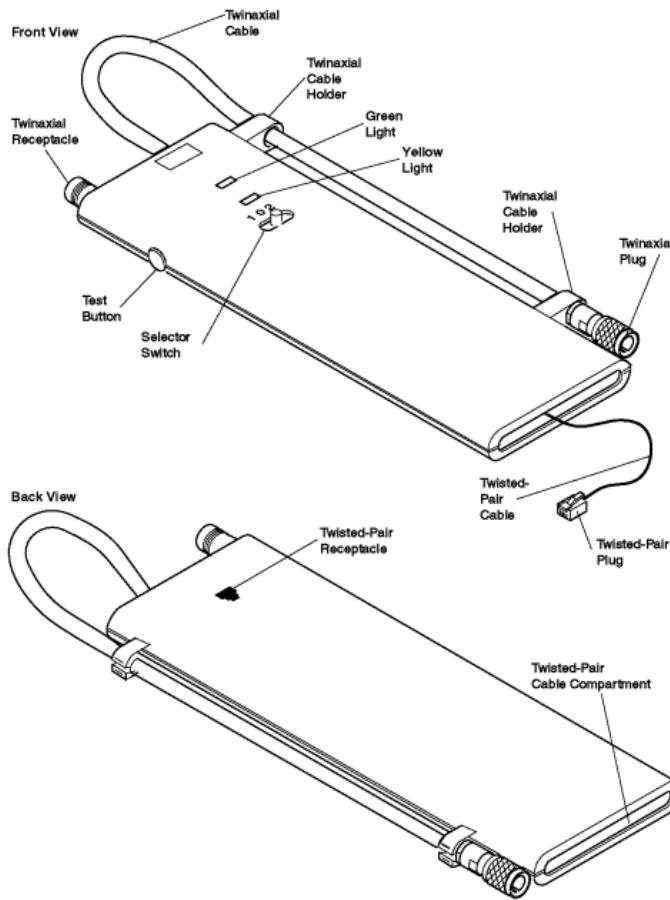


Figure 6. Port Tester

2.1.6 MAP 0600: Twinaxial Cabling (Resistance Measurements)

This MAP directs you to use resistance measurements to locate cable and workstation problems. This technique works, but it is slow and tedious. If you have access to an IBM Workstation Controller Port Tester, see "[MAP 0500: Twinaxial Cabling \(Port Tester\)](#)" in topic 2.1.5 for an improved method of finding cable or workstation problems.

To use this MAP in isolating a problem with the twinaxial cable or a workstation attached to the 5494, perform the following actions:

1. Obtain copies of the IBM 5494 Remote Workstation Setup Worksheets.
2. Identify the failing workstations and the 5494 port used for attachment.

If the System Available indicator is off at all attached workstations, all workstations are failing.

If the System Available indicator is on at any attached workstation, use the following procedure to identify the failing workstations:

1. Make sure that the power at all workstations is turned on and that the workstations are connected to the cabling system.
 2. Confirm that the SRC 0081, indicating that too many workstations are attached, does not appear at any workstation position on the screen.
 3. Compare the Remote Workstation Setup Worksheets with the information you gathered when verifying workstation connections to identify all failing workstations on all 5494 ports used. See "[Displaying the Status of 5494 Devices Attached to Twinaxial Ports](#)" in topic [6.2.11](#) for instructions. A workstation is failing if:
 - o Its power is turned on
 - o It is connected to the cabling system
 - o It is not shown on the operator panel when verifying workstation connections.

Note: If more than one port is used, determine which ports have failing workstations attached. If more than one port has failing workstations attached, do the steps in this MAP, starting at [Step 001](#), once for each port, with failing workstations attached.

|001|| |

Are all workstations attached to this port failing? Yes No |||__| |002||__||| - Refer to the maintenance or setup manual for the workstation and I check that for all failing workstations:

- II° Addresses are correctly set according to the setup form.
 - II° No addresses are duplicated on the same port.
 - II° The twinaxial cables are correctly terminated.
 - II° Cables are tightly and correctly connected.

||| Are the addresses correctly set and the twinaxial cables correctly terminated? | Yes No ||||| _ ||| 003 ||| _ |||| - Correct the address, the twinaxial cable termination, or both. |||| - Check for normal operation. ||||| _ ||| 004 ||| _ |||| Go to [Step 005](#). |
||| _ ||| 005 ||| _ | (From step 004)

- Disconnect the cable to the failing workstations at the 5494 I/O panel.
 - Connect an ohmmeter to the twinaxial cable and check for the resistance as shown in [Table 1](#). (See [Figure 7](#).)

Table 1. Measuring Resistances at the Failing Workstations		
Connect Meter Leads As Follows:		
Positive	Negative	Normal Resistance
Phase A	Phase B	<250 Ohms
Phase B	Phase A	<250 Ohms
Shield	Phase A	<140 Ohms
Shield	Phase B	<140 Ohms

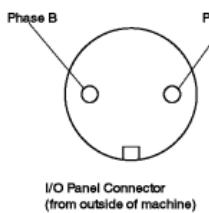


Figure 7. I/O Panel Connector

Were all resistance measurements in the normal range?

Yes No

| 006 |

Go to [Step 024](#).

| 007 |

Perform the following steps at the workstations. You will need the following items:

- An ohmmeter
- Remote Workstation Setup Worksheets.

Note: The term *data path* includes all of the cables and accessories used to connect one or more workstations to a port.

Perform the following steps:

1. Disconnect the cable from the twinaxial socket (socket 1) of the last workstation on the data path.
2. Set the ohmmeter to the 2k-ohm or higher scale.
3. Connect the ohmmeter to the twinaxial connector of the cable as shown in [Table 2](#). (See [Figure 7](#).) If any measurement is less than 5000 ohms, record the ohmmeter connection that has the low resistance.

Table 2. Socket 1 of Last Workstation to Previous Workstation		
Connect Meter Leads As Follows:		
Positive	Negative	Normal Resistance
Phase A	Phase B	>5000 Ohms
Phase B	Phase A	>5000 Ohms
Shield	Phase A	>5000 Ohms
Shield	Phase B	>5000 Ohms

Were all four resistance measurements more than 5000 ohms? Yes No ||| | 008 | | |

- ||
1. || 1. Leave the twinaxial cable to the last workstation disconnected.
 2. || 2. Starting at the workstation nearest the control unit, perform the following steps at each workstation:
 - || ° Disconnect the twinaxial cable at socket 2 of the | workstation.
 - || ° Connect the ohmmeter to the twinaxial cable you disconnected | from socket 2 and check for the resistances as shown in | [Table 3](#). (See [Figure 7](#).)

Table 3. Socket 2 of Workstation to Next Workstation		
Connect Meter Leads As Follows:		
Positive	Negative	Normal Resistance
Phase A	Phase B	>5000 Ohms
Phase B	Phase A	>5000 Ohms
Shield	Phase A	>5000 Ohms
Shield	Phase B	>5000 Ohms

- 11° If one or more resistance measurements are lower than the | normal range, reconnect the cable to socket 2. Repeat the | measurements at the next workstation until all measurements | are in the normal range or until you do the test at the | next-to-last workstation. |
 - 11° Answer YES to the following question as soon as all | measurements are in the normal range. |

||| Are all resistances in the normal range? | Yes No ||||| - Report to the customer that there is a short circuit in the cable between the last workstation you checked and the next-to-last workstation. ||||| - Check the workstation twinaxial interface on the workstation that you just disconnected (see "[Workstation Twinaxial Interface Check](#)" in topic E.2.5). || Does the workstation twinaxial interface check out as good? | Yes No ||||| - Repair the workstation or report the problem to the customer for workstations that do not have IBM on-site service. ||||| - Report to the customer that there is a short circuit in the cable between the preceding workstation and the one you just checked. |

- Attach a jumper to phase A to the shield at the twinaxial connector of the cable you disconnected in [Step 007](#).
 - At the 5494 end of the data path, set an ohmmeter to the 20k-ohm or higher scale. Connect the positive lead to the shield and the negative lead to phase B.
 - Check for a resistance of more than 5000 ohms.

Is the resistance measurement more than 5000 ohms?

Yes No

The phase leads are reversed in the data path, probably because of a

- Report the problem to the customer and decide if you will continue to isolate the failure.

Do you want to isolate the failure?

Yes No

Reconnect all of the cables you disconnected.

- Reconnect all of the cables you disconnected.

- Leave the twinaxial cable to the last workstation disconnected.

Starting at the workstation nearest the 5494, perform the following steps at each workstation:

- Set an ohmmeter to the 20k-ohm or higher scale.
 - Disconnect the twinaxial cable at socket 2 of the workstation.
 - Connect the ohmmeter to the twinaxial cable disconnected from socket 2 as follows: the positive lead of the ohmmeter to the shield and the negative lead to phase B.
 - Check for a resistance of more than 5000 ohms.
 - If the resistance measurement is less than 5000 ohms, reconnect the cable to socket 2 and repeat the measurement at the next workstation until the measurement is more than 5000 ohms or until you have done the measurement at the next-to-last workstation.
 - When the measurement is more than 5000 ohms, the workstation you just disconnected or the cable from it to the preceding workstation is the cause of the failure. Use "[Workstation Twinaxial Interface Check](#)" in topic E.2.5 to check the workstation.
 - If the resistance is less than 5000 ohms at all workstations, the cable to the last workstation is failing.

| 017 |

Note: The term *data path* includes all of the cables and accessories used to connect one or more workstations to a port.

The data path must be terminated at the last workstation under either of the following conditions:

- The last workstation has cable-through and the terminator switch is set to the terminate position (position 1) or has an auto-terminating connector installed.
- The last workstation does not have cable-through (the workstation has only one socket and the terminating resistance is always present).

- Determine if the data path is terminated correctly.

Is the data path terminated correctly? Yes No ||||_||018||__|| - Report the problem to the customer.|||_||019||__|

- Check the workstation twinaxial interface of the last workstation on the data path (see "[Workstation Twinaxial Interface Check](#)" in topic E.2.5).

Does the last workstation twinaxial interface check out as good? Yes No ||||_||020||__|| - Repair the workstation or report the problem to the customer for | workstations that do not have IBM on-site service.|||_||021||__|

If the workstations are still failing, the possible cause is one of those that follow:

- Possible workstation causes:
 - Two or more workstations on the same data path are set for the same address.
 - Shorted diodes in a workstation twinaxial interface. (You can check these using "[Workstation Twinaxial Interface Check](#)" in topic E.2.5.)
- Possible cabling system causes:
 - A high-resistance connection in the data path
 - A failing station protector
 - A cable in the cabling system that is not terminated
 - A data path length that is longer than the maximum permitted.

The failure is probably caused by a problem in the cabling system.

Do you want to check the cabling system? Yes No ||||_||022||__|| - Check to see if the workstations are still failing.|| - If the workstations are still failing, report to the customer that | no problem was found and that the failure is probably in the | cabling system.|||_||023||__|

- Check to see if the workstations are still failing.
- If the workstations are still failing, report to the customer that the failure is caused by a cabling system problem.
- To further isolate the failure cause, you must use the procedures in "[Cable Signal Quality Check](#)" in topic E.2.3.

||024||__| (From step 006)

Note: The term *data path* includes all of the cables and accessories used to connect one or more workstations to a port.

Perform the following steps at the workstation. You will need the following items:

- An ohmmeter
- The Remote Workstation Setup Worksheet.

The data path must be terminated at the last workstation under either of the following conditions:

- The last workstation has cable-through and the terminator switch is set to the terminate position (position 1) or has an auto-terminating connector installed.
- The last workstation does not have cable-through (the workstation has only one socket and the terminating resistance is always present).

- Determine if the data path is terminated correctly.

Is the data path terminated correctly? Yes No ||| | 025 ||| ||| - Report the problem to the customer. ||| | 026 |||

- Do the workstation twinaxial interface check on the last workstation (see "[Workstation Twinaxial Interface Check](#)" in topic E.2.5).

Does the workstation twinaxial interface check out as good? Yes No ||| | 027 ||| ||| - Repair the workstation or report the problem to the customer for workstations that do not have IBM on-site service. ||| | 028 |||

- Reconnect the twinaxial cable to the last workstation.

Starting with the workstation nearest the 5494, perform the following steps at each workstation:

- Disconnect the twinaxial cable at socket 2 of the workstation.

- Connect the ohmmeter to the twinaxial cable you disconnected from socket 2 and check for the resistances as shown in [Table 4](#). (See [Figure 7](#).)

Table 4. Socket 2 to Next Workstation Resistance Measurements		
Connect Meter Leads As Follows:		
Positive	Negative	Normal Resistance
Phase A	Phase B	<250 Ohms
Phase B	Phase A	<250 Ohms
Shield	Phase A	<140 Ohms
Shield	Phase B	<140 Ohms

- If one or more resistance measurements are higher than the normal range, reconnect the cable to socket 2 and repeat the measurements at the next workstation until all measurements are in the normal range or until you do the measurements at the next-to-last workstation.

- Answer YES to the following question as soon as all measurements are in the normal range.

Are all resistances in the normal range?

Yes **No**

| 029 |

- Report to the customer that the cable between the last workstation you checked and the next-to-last workstation is open.

| 030 |

- Do the workstation twinaxial interface check on the workstation you just disconnected (see "[Workstation Twinaxial Interface Check](#)" in topic E.2.5).

Does the workstation twinaxial interface check out as good?

Yes **No**

| 031 |

- Repair the workstation or report the problem to the customer for workstations that do not have IBM on-site service.

| 032 |

- Report to the customer that the cable between the preceding workstation and the workstation you just checked is open.
-

2.1.7 MAP 0700: IBM Cabling System (Resistance Measurements)

This MAP directs you to use resistance measurements to locate cable and workstation problems. This technique works, but it is slow and tedious. If you have access to an IBM Workstation Controller Port Tester, see "[MAP 0500: Twinaxial Cabling \(Port Tester\)](#)" in topic [2.1.5](#) for an improved method of finding cable or workstation problems.

To use this MAP when the IBM Cabling System is used to connect the workstations to the 5494, perform the following actions:

1. Obtain copies of the Remote Workstation Setup Worksheet.
2. Identify the failing workstations and the control unit port used for attachment.

If the System Available indicator is off at all attached workstations, all workstations are failing.

If the System Available indicator is on at any attached workstation, use the following procedure to identify the failing workstations:

1. Make sure that power is turned on at all workstations and that all workstations are connected to the cabling system.
2. Confirm that the SRC 0081, indicating that too many workstations are attached, does not appear at any workstation position on the screen.
3. Compare the Remote Workstation Setup Worksheets with the information you gathered when verifying workstation connections to identify all failing workstations and the 5494 ports used. See "[Displaying the Status of 5494 Devices Attached to Twinaxial Ports](#)" in topic [6.2.11](#) for instructions. A workstation is failing if:
 - o Its power is turned on
 - o It is connected to the cabling system
 - o It is not shown on the operator panel when verifying workstation connections.

Note: If more than one 5494 port is used, determine which ports have failing workstations attached. If more than one port has failing workstations attached, perform the steps in this MAP, starting with [Step 001](#), once for each port with failing workstations attached.

____ |001| |____|

Are all workstations attached to this port failing? [Yes](#) No | | | | |002| | |____| | | Go to [Step 005](#). | | | | |003| |____|

- Test the impedance matching device (IMD) connected to the 5494 (see "[IBM Cabling System Tests](#)" in topic [E.2.6](#)).

Did the IMD test as good? [Yes](#) No | | | | |004| | |____| | | - Report the problem to the customer. | | | | |005| |____| (From step 002)

Note: The term *data path* includes all of the cables and accessories used to connect one or more workstations to a control unit port.

- Connect the IMD, at the 5494 location, to the cabling system wall connector if it is not connected.
- Set an ohmmeter to the 200 ohm or higher scale and connect the ohmmeter to phase A and phase B at the twinaxial connector of the IMD.

- Record the resistance measurement.
- Exchange the meter leads and record the resistance measurement.

Were both resistance measurements less than 600 ohms?

Yes No

006	

Go to [Step_030](#).

007	

- Disconnect the IMD or direct-connect cable from the twinaxial socket (socket 1) of the last workstation on the data path.
- Set an ohmmeter to the 2k-ohm or higher scale.
- Measure and note the resistance at the twinaxial connector using the following connections:

- Connect the positive lead to phase A and the negative lead to phase B.
- Connect the positive lead to phase B and the negative lead to phase A.
- Connect the positive lead to the shield and the negative lead to phase A.
- Connect the positive lead to the shield and the negative lead to phase B.

Were all four measurements more than 5000 ohms? Yes No ||| | 008 ||| ||| Go to [Step_043](#). ||| | 009 |||

- Attach a jumper from phase A to the shield at the twinaxial connector of the cable that you disconnected in [Step_007](#).

- At the 5494 end of the data path, set the ohmmeter to the 2k-ohm or higher scale. Connect the positive lead of the ohmmeter to the shield and the negative lead to phase B.

- Check for a resistance of more than 5000 ohms.

Is the resistance measurement more than 5000 ohms? Yes No ||| | 010 ||| ||| The phase leads are reversed in the data path, probably because of a cabling system problem. || - Report the problem to the customer and decide if you will continue to isolate the failure. || **Do you want to isolate the failure?** || Yes No ||| | 011 ||| ||| - Reconnect all cables in the original configuration. ||| End of Call. ||| | 012 ||| ||| - Leave the jumper installed at the last workstation end of the data path. || Go to [Step_045](#). || | 013 |||

The data path must be terminated at the last workstation by either of the following methods:

- The last workstation is connected to the wall connector by a direct-connect cable with a terminator assembly installed in socket 2 and the terminator switch (if present) set to the non-terminated position (position 2). You can only use this method with workstations that have cable-through installed.
- The last workstation is connected to the wall connector by an IMD and the workstation terminator switch (if present) is set to the terminated position (position 1).

- Determine if the data path is terminated correctly.

Is the data path terminated correctly? Yes No ||| | 014 ||| ||| - Report the problem to the customer. ||| | 015 |||

- Check the workstation twinaxial interface of the last workstation on the data path (see "[Workstation Twinaxial Interface Check](#)" in topic E.2.5).

Does the last workstation twinaxial interface check out as good? Yes No ||||_||016||__|| - Repair the workstation problem or report the problem to the customer for workstations that do not have IBM on-site service. |||_||017||__||

- Answer yes to the following question if the terminator assembly is not used.

- Test the terminator assembly (see "[IBM Cabling System Tests](#)" in topic E.2.6).

Does the terminator assembly check out as good? Yes No ||||_||018||__|| - Report the failing terminator assembly to the customer. |||_||019||__||

If the workstations are still failing, the remaining possible causes are:

- Workstation problems:

- Two or more workstations on the same data path are set for the same address.
- Failing diodes in a workstation twinaxial interface (can be tested using "[Workstation Twinaxial Interface Check](#)" in topic E.2.5).

- Cabling system problems:

- A high-resistance connection in the data path
- A failing surge suppressor
- A cable that is not terminated
- The data path length is longer than the maximum permitted.

The failure is probably in the cabling system.

Do you want to continue checking out the cabling system? Yes No ||||_||020||__|| - Check to see if the workstations are still failing. || - If the workstations are still failing, report to the customer that no problem was found and that the failure is probably in the cabling system. |||_||021||__||

- Disconnect the 5494 from the cabling system wall connector.

Perform the following steps at the cabling system distribution panel. You will need the following items:

- An ohmmeter
- The Remote Workstation Setup Worksheet
- The cable schedule.

- See "[IBM Cabling System Data Path Tests](#)" in topic E.2.7 and perform the following tests in the order listed. Do this until you find an error condition or until you have checked all the cable drops on the data path (including any cable between panels, if used).

- Test the cable drop from the distribution panel to the 5494.
- Test the cable drop from the distribution panel to each workstation (including the last) starting with the one nearest the 5494.
- If one or more workstations connect to a different distribution panel, check the cable between panels. Then, continue checking the workstation cable drop at the second panel.

Are any of the cable drops failing? Yes No ||||_||022||__|| - Perform the following checks for each workstation that is attached to the data path. Make sure that you check all failing workstations and all other workstations that are connected to the same data path. For information about the address and terminator setting, see the workstation setup book.

- |||° Workstation twinaxial interface check (see "[Workstation | Twinaxial Interface Check](#)" in topic E.2.5).||
- |||° Addresses are correctly set according to the Remote Workstation | Setup Worksheet.||
- |||° No duplicate addresses on the same port.||
- |||° Terminator switches (if present) are set correctly.||
- |||° Cables are tightly and correctly connected.||

||| Are all of the workstations operating correctly? || Yes No ||||_||023||__|| - Repair the workstation problem or report the problem to the customer for workstations that do not have IBM on-site service. ||||_||024||__|| - Check to see if the workstations are still failing. || - If the workstations are still failing, report to the customer that the failure is caused by a cabling system problem. || To further isolate the failure cause, use the

procedures in "[Cable | Signal Quality Check](#)" in topic E.2.3. | _____ |||_
|025| |__|

Is the failing cable drop different from the one connected to the 5494?

Yes No

|026|

- Reconnect all of the cables in the original configuration.
- Report to the customer that the cable drop from the distribution panel to the 5494 is failing.

|027|

- Reconnect all of the cables at the distribution panel.

- Check the twinaxial interface of the workstation attached to the failing cable drop (see "[Workstation Twinaxial Interface Check](#)" in topic E.2.5).

Does the workstation twinaxial interface check out as good?

Yes No

|028|

- Repair the workstation problem or report the problem to the customer for workstations that do not have IBM on-site service.

|029|

One of the following components is failing:

- The twinaxial Y, IMD, or direct-connect cable between the workstation and the wall connector
- The terminator assembly
- The cable drop from the distribution panel to the wall connector.

Use the procedures in "[IBM Cabling System Tests](#)" in topic E.2.6 to test the accessories listed above.

- Reconnect all of the cables in the original configuration.
- Report the failure cause to the customer.

_____|030| |__| (From step 006)

The data path must be terminated at the last workstation by one of the following methods:

- The last workstation is connected to the wall connector by a direct-connect cable with a terminator assembly installed in socket 2 and the terminator switch (if present) set to the non-terminated position (position 2). You can use this method only with workstations that have cable-through installed.
- The last workstation is connected to the wall connector by an IMD and the workstation terminator switch (if present) is set to the terminated position (position 1).

- Determine if the data path is terminated correctly.

Is the data path terminated correctly? Yes No | | | | |031| | | | | | - Report the problem to the customer. | | | | |032| |__|

- Check the IMD or direct-connect cable and terminator assembly used at the last workstation (see "[IBM Cabling System Tests](#)" in topic E.2.6).

Do the IMD or direct-connect cable and terminator assembly check out as good? Yes No ||||_||033|||_|| - Report the problem to the customer.||
||_||034||_||

- Check the workstation twinaxial interface. See "[Workstation Twinaxial Interface Check](#)" in topic E.2.5.

Does the workstation twinaxial interface check out as good? Yes No ||||_||035|||_|| - Repair the workstation problem or report the problem to the customer for workstations that do not have IBM on-site service.|||_||036||_||

- Disconnect the 5494 from the cabling system wall connector.

To do the steps at the cabling system distribution panel, you will need the following items:

- An ohmmeter
- The Remote Workstation Setup Worksheet
- The cable schedule.

- Do the continuity test for each of the following in the order listed until you find an error or until you have tested all cable drops (see "[IBM Cabling System Data Path Tests](#)" in topic E.2.7).

- The cable drop from the distribution panel to the control unit.
- The cable drops from the distribution panel to each workstation (including the last) starting with the one nearest the 5494.
- If one or more workstations connect to a different distribution panel, check the cable between the panels. Continue checking the workstations at the second panel.

Are any cable drops failing? Yes No ||||_||037|||_|| - Reconnect all of the cables in the original configuration.|| The failure is probably caused by one of the following conditions:

- ||
- |||° Multiple connections with high resistance
 - |||° Cable length is in excess of the maximum permitted.|| Report the problem to the customer.

||||_||038||_||

Is the failing cable drop different from the one connected to the 5494?

Yes **No**

|039|

- Reconnect all of the cables in the original configuration.
- Report to the customer that the cable drop from the distribution panel to the 5494 is failing.

|040|

- Reconnect all of the cables at the distribution panel.

- Go to the workstation attached to the failing cable drop and check the workstation twinaxial interface (see "[Workstation Twinaxial Interface Check](#)" in topic E.2.5).

Does the workstation twinaxial interface check out as good?

Yes **No**

|041|

- Repair the workstation problem or report the problem to the customer for workstations that do not have IBM on-site service.

One of the following is failing:

- The twinaxial Y, IMD, or direct-connect cable between the workstation and the wall connector
- The terminator assembly
- The cable drop from the distribution panel to the wall connector.

You can use the procedures in "[IBM Cabling System Tests](#)" in topic E.2.6 to test the accessories listed previously.

- Reconnect all of the cables in the original configuration.
- Report the failure cause to the customer.

| 043 | | | (From step 008)

- Test the direct-connect cable or IMD used to connect the last workstation to the wall connector (see "[IBM Cabling System Tests](#)" in topic E.2.6).

Does the direct-connect cable or IMD used to connect the last workstation check out as good? Yes No | | | | | 044 | | | | | - Reconnect all of the cables in the original configuration. | | - Report the failing cable to the customer. | | | | | 045 | | | (From step 012)

- At the last workstation, connect the direct-connect cable or IMD to the wall connector but do not connect it to the workstation.

To do the steps at the cabling system distribution panel, you will need the following items:

- An ohmmeter
- The Remote Workstation Setup Worksheet
- The cable schedule.

- Disconnect the red leg of the Y that connects the cable drop to the 5494.
- Install a test connector on the cable drop to the 5494.
- Set the ohmmeter to the 2k-ohm or higher scale.
- Connect the ohmmeter, using [Table 5](#), to check the resistance that was fewer than 5000 ohms in the end-to-end test you ran earlier. (See [Figure 8](#).)
- Check for a resistance of less than 5000 ohms.

Table 5. Distribution Panel Resistance Measurements			
If ohmmeter connection for earlier test was:		Connect ohmmeter leads as follows for this test:	
Positive	Negative	Positive	Negative
Phase A	Phase B	green	red
Phase B	Phase A	red	green
Shield	Phase A	shield	green
Shield	Phase B	shield	red

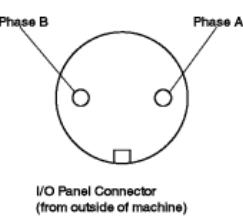


Figure 8. I/O Panel Connector

Is the resistance measurement less than 5000 ohms?

Yes No

| 046 |

Report to the customer that the cable drop from the distribution panel to the 5494 is failing.

| 047 |

- Leave the ohmmeter connected and disconnect the center connector of each Y, one at a time, starting with the Y nearest the 5494.

- Check for a resistance of more than 5000 ohms after you disconnect each Y until you find a resistance of more than 5000 ohms, or until you have disconnected the center connector of all of the Ys.

Is the resistance measurement more than 5000 ohms after disconnecting the center connector of any Y?

Yes No

| 048 |

- Report to the customer that the cable drop from the distribution panel to the last workstation is failing.

| 049 |

The failing cable drop is the one you disconnected just before you obtained an ohmmeter reading of more than 5000 ohms.

- Check the workstation twinaxial interface of the workstation that is attached to the failing cable drop (see "[Workstation Twinaxial Interface Check](#)" in topic E.2.5).

Does the workstation twinaxial interface check out as good?

Yes No

| 050 |

- Repair the workstation or report the problem to the customer for workstations that do not have IBM on-site service.

| 051 |

Either the cable drop from the distribution panel or the twinaxial Y is failing.

To determine which is failing, check the twinaxial Y (see "[IBM Cabling System Tests](#)" in topic E.2.6).

If the twinaxial Y functions correctly, then the cable drop from the distribution panel to the wall connector is failing.

- Report the problem to the customer.

2.1.8 MAP 0800: Performing Twinaxial Cable Diagnostics

|001|

- Disconnect all twinaxial cables from the distribution cables.
- Run the diagnostics with no connections. See "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2.

Did the diagnostics fail?

Yes No

|002|

Is the wiring twinaxial wiring?

Yes No

|003|

The wiring must be TTP wiring.

- Connect the distribution cable to the multiplexer.
- Disconnect all devices.
- Connect a TTP workstation balun (P/N 96X6187) to one port.
- Connect a terminator to the other end of the balun.
- Run the diagnostics again.
- If the diagnostics fail, isolate the wiring problem between the distribution cable and the multiplexer and follow the instructions in "[Cable Signal Quality Check](#)."
- Connect the devices back one at a time to the multiplexer.
- Run the diagnostics again.

Did the diagnostics run successfully?

Yes No

|004|

- Isolate the wiring problem to the device. Connect the balun to the TTP port and follow the instructions in "[Cable Signal Quality Check](#)."

|005|

- Connect multiple devices to the multiplexer.
- Run the diagnostics again.

Did the diagnostics run successfully?

Yes No

|006|

- Replace the multiplexer with an IBM 5299.

|007|

- There is no problem. End of call.

008

- Connect the twinaxial devices one at a time.
- Check the C1 screen for error.

Was there an error?

Yes No

009

- The controller is OK.

010

- Isolate the problem in the twinaxial connection by using the procedure in "[Cable Signal Quality Check.](#)"

011

- Replace the adapter at location n.

3.0 Topic 3. 5494 Message Codes and System Reference Codes (SRCs)

This topic contains the 5494 message codes and system reference codes (SRCs).

- Both message codes and SRCs are displayed on the 5494 operator panel LCD. The message codes are displayed on the left-hand side of the LCD and SRCs are displayed on the right-hand side of the LCD.
- Message codes are not displayed on a workstation screen.
- SRCs are displayed on a workstation screen as 4 to 6 blinking characters that are located in the upper-left corner or the lower-left corner of the screen.

Subtopics:

- [3.1 Message Codes](#)
- [3.2 SRCs](#)

3.1 Message Codes

000

Cause: Indicates that the Req key has been pressed.

CE Action: Type the 3-digit request code, and then press **Enter**. See "[Concurrent Mode from the Operator Panel \(Online\)](#)" in topic [6.2](#) for the 3-digit request codes.

001-01

Cause: Performing POST. This test runs automatically each time the 5494 power is turned on, or the 5494 is restarted. During this test, a flashing asterisk (*) is displayed on the right-hand side of the LCD. This test usually lasts about 1 minute and is followed by an IPL.

CE Action: None.

001-02

Cause: Loading extended diagnostics from the system diskette. This takes about 30 seconds.

CE Action: None.

002-01

Cause: 5494 failure.

CE Action: Look up the SRC displayed on the right-hand side of the LCD. See "[SRCs](#)" in topic [3.2](#).

002-02

Cause: An error has been detected during POST. This may be due to the installation or removal of an adapter. Extended diagnostics can resolve the problem or provide more information.

CE Action: Record the SRC displayed on the right-hand side of the LCD. Then, press **Enter** to run extended diagnostics.

002-03

Cause: The 5494 operator panel cannot communicate with the 5494 planar.

CE Action: Look up the SRC displayed on the right-hand side of the LCD. See "[SRCs](#)" in topic [3.2](#).

002-04

Cause: An error has occurred during POST, but the 5494 can perform some functions.

CE Action: Record this message code and the SRC displayed on the right-hand side of the LCD, and then press **Enter** to continue.

002-05

Cause: An error has occurred. At this time, three keys are active on the keypad and can be used to change the IPL mode. The default is 0, which will load extended diagnostics.

CE Action: If the SRC displayed on this previous screen does not identify the cause of the problem, press **Enter** to load extended diagnostics. Then, select option 2 from the main menu to test all 5494 hardware.

| **Note:** At times, it is possible to operate the 5494 after a POST
| error. For example, if you experienced a 152 error code, you can
| select "1" on the 002-05 panel and press **Enter**. The 5494 will
| attempt to operate while the customer arranges to get the cabling
| repaired.

002-06

Cause: An unexpected critical error has occurred. This type of error is usually intermittent.

CE Action: Look up the SRC that is displayed on the right-hand side of the LCD. See "[SRCs](#)" in topic 3.2.

002-07

Cause: An error has occurred while loading from the diskette.

CE Action: Press **Enter** to try the operation again.

If the error reoccurs, insert the backup copy of the 5494 System Diskette, and press **Enter** to try again. If the backup diskette loads successfully, order a new system diskette to replace the damaged one.

To order a replacement diskette in the U.S., call 1-800-334-1089. To order a replacement diskette outside the U.S., contact your local IBM branch office. Have the 5494 serial number available.

002-08

Cause: The installed system diskette can be damaged.

CE Action: Insert the backup copy of the 5494 System Diskette and press **Enter** to try again. If the backup diskette loads successfully, order a new system diskette to replace the damaged one.

To order a replacement diskette in the U.S., call 1-800-334-1089. To order a replacement diskette outside the U.S., contact your local IBM branch office. Have the 5494 serial number available.

002-09

Cause: An unexpected critical software error has occurred.

CE Action: Look up the SRC reported by the customer. See "[SRCs](#)" in topic [3.2](#).

003-01

Cause: A problem has been detected.

CE Action: Insert the 5494 System Diskette and press **Enter** to run extended diagnostics.

003-02

CE Action: Insert the system diskette, pull the 5494 keyboard out, and:

- Type **0** and press **Enter** to run extended diagnostics.
 - Type **1** and press **Enter** to begin normal operation.
 - Type **2** and press **Enter** to start system configuration.
-

003-03

Cause: The installed diskette is not recognized as the system diskette.

CE Action: Insert the system diskette and press **Enter** to continue.

If the diskette is the system diskette, remove it and insert the backup copy. Then, press **Enter** to continue. Remember to order a replacement system diskette if you just installed your backup copy.

To order a replacement diskette within in the U.S., call 1-800-334-1089. To order a replacement diskette outside the U.S., contact your local IBM branch office. Have the 5494 serial number available.

003-04

Cause: The diskette in the diskette drive is not recognized as the 5494 System Diskette.

CE Action: Insert the 5494 System Diskette and press **Enter**. If the system diskette was in the drive during this error, remove it, insert the backup copy, and:

- Type **0** and press **Enter** to run extended diagnostics.
 - Type **1** and press **Enter** to begin normal operation (default).
 - Type **2** and press **Enter** to start system configuration.
-

010-01

Cause: The 5494 setup information has been corrupted or no longer matches the installed adapters.

CE Action: Press **Enter** to run the 5494 setup program.

010-04

Cause: Have any adapters been added, removed, or moved to a new slot in the 5494?

CE Action:

- Type **1** and then press **Enter** for **yes**.
 - Type **0** and then press **Enter** for **no**.
-

010-05

Cause: The 5494 contains a defective adapter.

CE Action: Look up the SRC displayed on the right-hand side of the LCD. See "[SRCs](#)" in topic 3.2.

010-06

Cause: The 5494 clock must be set because the date, the time, or both are incorrect.

CE Action: Press **Enter** to continue.

010-07

Cause: The 5494 clock is not working correctly.

Note: Errors recorded in the 5494 error log can be missing time-stamp information.

CE Action: Press **Enter** to attempt to set the clock for use until the 5494 power is turned off.

010-08

Cause: The 5494 setup information has been corrupted or no longer matches the installed adapters. This may be due to the installation or removal of an adapter. It may also be caused by IPLing a new release of microcode that supports an installed adapter that was not supported by the previous level of microcode.

CE Action: Press **Enter** to run the 5494 setup program.

010-09

CE Action: Press **Enter** to go to the extended diagnostics main menu. Then, type **2** and press **Enter** to perform a more detailed test of the 5494.

020-01

Cause: Extended diagnostics main menu.

CE Action: See the following table for a description of the functions available on the extended diagnostics main menu.

To select from the following functions, press the **up** and **down arrows** and **Enter**, or type the number and press **Enter**.

Number	Function
1	View 5494 features Displays the installed adapters and amount of available storage.
2	Test all 5494 hardware Runs extended diagnostics tests on all hardware. If the 5494 contains an Ethernet adapter start the test from the CE main menu. Press Alt+PF1 to access the CE main menu.
3	Set date and time Allows date and time on internal clock to be changed or viewed.
4	Run setup Initializes the internal descriptions of the installed adapters. If the 5494 contains a Token-Ring adapter, the Token-Ring data rate can be set or changed using the run setup option. Similarly, if the 5494 contains an Ethernet adapter, the media type can be selected or changed using the run setup option.

Press **Esc** to exit extended diagnostics and restart the 5494. Press **Alt+PF1** to access the CE main menu.

020-02

Cause: All 5494 tests have completed. No errors were detected.

CE Action: Press **Enter** to restart the 5494. Press **Esc** to return to the main menu.

020-03

Cause: The system diskette installed in the diskette drive could be damaged.

CE Action: Look up the SRC that is displayed on the right-hand side of the LCD. See "[SRCs](#)" in topic [3.2](#).

020-04

CE Action: Insert the system diskette, and then press **Enter** to continue. Press **Esc** to return to the extended diagnostics main menu.

021-xx

CE Action: [Table 6](#) lists the messages and meanings that describe the installed features of the 5494.

To scroll through the list, press the **up** and **down arrows**. To return to the main menu, press **Esc**.

Table 6. Messages		
Message Code	Description	ID Values
021-01	ID of adapter in slot 1	E00F Token-Ring adapter
021-02	ID of adapter in slot 2	FEE6 Ethernet adapter
021-03	ID of adapter in slot 3	8FF6 Twinaxial adapter
021-04	ID of adapter in slot 4	----- Empty slot ***** Unrecognized adapter
021-05	Amount of installed storage (megabytes)	
021-06	Version numbers for the planar and operator panel (available only in CE test mode.)	

022-01

Cause: Loading extended diagnostics from diskette.

CE Action: None.

022-02

Cause: All extended diagnostic tests have completed without detecting any error conditions, or Req has been pressed and the extended diagnostics test that was running has been stopped.

CE Action: Press **Enter** to return to the main menu.

023-xx

CE Action: Change 5494 date or time. See the following table:

Message	Description
023-01	Change or view the current date. Valid range: (91..50):(01..12):(01..31). Valid format: yy:mm:dd
023-02	Change or view the current time. Valid range: (01..23):(00..59):(00..59). Valid format: hh:mm:ss
023-03	The date entered is not valid. Valid range: (91..50):(01..12):(01..31). Valid format: yy:mm:dd Press Enter to continue.
023-04	The time entered is not valid. Valid range: (01..23):(00..59):(00..59). Valid format: hh:mm:ss Press Enter to continue.

- Press the **left** and **right arrows** to move the cursor.
- Press the numbers to change the value.
- Press **Enter** to save the value and continue.
- Press **Esc** to quit without changing the value.

024-01

Cause: The current data rate for the Token-Ring adapter in the 5494 is shown on the right-hand side of the LCD.

CE Action: Press the **up** or **down arrow** to scroll to the desired data rate (4 or 16 Mbps), and then press **Enter** to select.

024-02

Cause: 5494 setup is complete.

CE Action: Press **Enter** to continue.

024-03

Cause: An unrecognized adapter is installed in the 5494.

CE Action: Look up the SRC that is displayed on the right-hand side of the LCD. See "[SRCs](#)" in topic [3.2](#).

024-04

Cause: The current Ethernet media type is displayed on the right-hand side of the LCD.

CE Action: Press the **up** or **down arrow** to scroll to the desired media type (10BASE2, 10BASE5, or 10BASE-T), and then press **Enter** to select.

024-05

Cause: A new adapter card that is not supported by the microcode was found in the controller. The slot containing the unsupported adapter is identified by the SRC on the right-hand side of the operator panel.

CE Action: Press **Enter** to proceed with the initialization of the controller. The microcode disables the unsupported adapter.

030-01

Cause: CE main menu.

CE Action: To select from the following functions, press the **up** or **down arrow** and **Enter**, or type the number of the function you wish to select and press **Enter**. Press **Esc** to exit this menu.

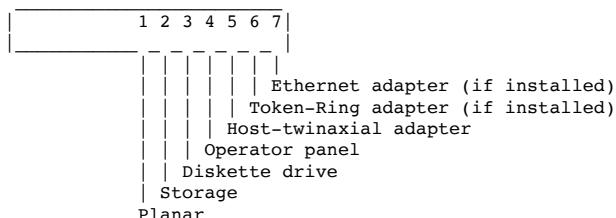
Number	Function
1	View 5494 features
2	Test all 5494 hardware Runs extended diagnostics on all hardware.
3	Set date and time Allows date and time on the internal clock to be changed or viewed.
4	Run setup Initializes the internal descriptions of the installed adapters. If the 5494 contains a Token-Ring adapter, the Token-Ring data rate can be set or changed using the run setup option. Similarly, if the 5494 contains an Ethernet adapter, the media type can be selected or changed using the run setup option.
5	Test selected 5494 hardware Permits selection of specific tests and number of times test is to run.
6	View 5494 error log Allows viewing of the SRCs, and the date and time associated with errors in the 5494 error log.
7	View storage correction counters Displays the number of corrections to storage made by the 5494 error-correcting circuits.

Press **Enter** to select an option. Press **Esc** to exit extended diagnostics and restart the 5494.

030-02

Cause: Extended diagnostics test selection menu.

CE Action: The right-hand side of the LCD displays the numbers 1 through 7 that correspond to the tests that can be selected. The following numbers that correspond to the available tests are:



Active keys:

- 1 to 7 to toggle the test selection between on or off. Press the number to toggle between select and not select. The "-" indicates that the test is not selected to run.
 - **Esc** to return to the previous menu.
 - **Enter** to go to the test options menu.
-

030-03

Cause: Test options menu.

CE Action: To select from the following options, press the **up** or **down arrow** key and **Enter**, or type the number and press **Enter**. Enter one of the following options:

- 1** Run all selected tests once (default).
- 2** Run all selected tests until an error is detected.
- 3** Run all selected tests until Req is pressed. Any detected errors will be logged in the 5494 error log.

Active keys:

- **Enter** to select the option displayed on the LCD.
- **Esc** to return to the CE main menu.

030-04

Cause: All extended diagnostics tests have completed without detecting any errors, or Req has been pressed and the extended diagnostics test that was running has been stopped.

CE Action: Press **Enter** to return to the main menu.

Note: Because no errors were detected, it is recommended that you select option 6 on the CE main menu to view the 5494 error log for an entry that might help in resolving the problem.

030-05

Cause: All 5494 tests have completed.

CE Action: Press **Enter** to return to the main menu.

Note: You can view errors that were detected during these tests by selecting option 6 on the CE main menu.

030-06

Cause: Are you sure that you want to exit and restart the 5494?

CE Action: Press **Enter** to exit and restart the 5494. Press **Esc** to return to the extended diagnostics main menu.

031-01

Cause: The planar test is running. Do not turn the power **OFF (0)** or restart the 5494 during this test.

CE Action: Pressing Req will stop the test.

Note: During some portions of the planar test, communication with the operator panel is not available. Therefore, you need to press Req several times if you wish to stop the test. After you press Req, it can take several seconds before the test terminates.

031-02

Cause: An error has been detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD. See "[SRCs in topic 3.2](#)". Press **Enter** to continue.

032-01

Cause: The storage test is running. This test can take up to 2 minutes.

CE Action: Pressing Req will stop the test.

Note: After you press Req, it can take several seconds before the test terminates.

032-02

Cause: An error has been detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD. See "[SRCs in topic 3.2](#)". Press **Enter** to continue.

033-01

Cause: The diskette drive test is running.

CE Action: Pressing Req will stop the test.

Note: After you press Req, it can take several seconds before the test terminates.

033-02

Cause: Verify that the system diskette is **not** write-protected.

CE Action: Remove the system diskette and verify that the tab on the diskette is pushed to the top of the slot and the opening in the slot is covered by the tab. Reinsert the diskette in the diskette drive and press **Enter** to continue.

033-03

Cause: Set the system diskette to write-protected.

CE Action: Remove the system diskette and push the tab on the diskette to the bottom of the slot so that the area above the tab is open. Reinsert the diskette in the diskette drive and press **Enter** to continue.

033-04

Cause: Set the system diskette to **not** write-protected.

CE Action: Remove the system diskette. Slide the write-protect tab to the write position. (The tab is pushed to the top of the slot and the opening in the slot is covered by the tab.) Reinsert the diskette in the diskette drive and press **Enter** to continue.

033-05

Cause: An error has been detected while testing the system diskette and the diskette drive. The problem can be a defective system diskette.

CE Action: Replace the installed system diskette with a backup copy of the system diskette, and then press **Enter** to run the diskette test again. Remember to order a replacement diskette if the problem is with the system diskette.

To order a replacement diskette in the U.S., call 1-800-334-1089. To order a replacement diskette outside the U.S., contact your local IBM branch office. Have the 5494 serial number available.

If this error occurs after replacing the system diskette with the backup, the diskette drive must be replaced.

033-06

Cause: 5494 failure.

CE Action: Look up the SRC displayed on the right-hand side of the LCD. See "["SRCs" in topic 3.2](#)".

034-01

Cause: The operator panel test is running. The first part of the test causes the operator panel to be reset. The LEDs flash and the message 001-01 is displayed on the right-hand side of the LCD for a few seconds.

CE Action: None.

034-02

Cause: Manual keypad test.

CE Action:

1. Press all keys on the keypad **except** Enter and Alt.
2. Press **Alt + PF1** to test the Alt key. Do not press PF2.
3. Press **Enter** twice.

034-03

Cause: Operator panel LCD test.

Three different patterns are shown repeatedly on the LCD.

1. The LCD displays all dots.
2. The LCD is blank.
3. The LCD displays the numbers 0 through 9, and the letters A through F.

CE Action:

1. Press **Enter** to begin the test.
2. Watch the LCD to determine if the sequence is correct.
3. If the pattern displayed is correct, type **1**. If the pattern is **not** correct, type **0**.

034-04

Cause: Operator Panel LED test. Each LED is turned on and then off from bottom to top, and then from bottom to top again.

CE Action:

1. Press **Enter** to begin the test.
2. Watch the LEDs to determine if the LED sequence is correct. Only one LED should be lit at a time.
3. If the sequence is correct, type **1**. If the sequence is **not** correct, type **0**.

034-05

Cause: An error has been detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD. See "[SRCs in topic 3.2](#)". Press **Enter** to continue.

035-01

Cause: Twinaxial adapter test is running.

Pressing Req will stop the test.

CE Action: None.

Note: After you press **Req**, it can take several seconds before the test terminates.

035-02

Cause: 5494 failure.

CE Action: Look up the SRC displayed on the right-hand side of the LCD. See "[SRCs](#)" in topic 3.2.

036-01

Cause: Select the type of Token-Ring cable to which this 5494 is attached.

CE Action:

- Type **1** and press **Enter** if the cable is an IBM Token-Ring adapter cable.
- Type **2** and press **Enter** if the cable is a type-3 media filter cable.

036-02

Cause: Is the wrap plug that attaches to the Token-Ring adapter when the cable is disconnected available for use?

CE Action:

- If yes, type **1** and press **Enter**.
- If no, type **0** and press **Enter**.

036-03

CE Action: Disconnect the Token-Ring adapter cable from the Token-Ring network. Leave the other end of the cable connected to the Token-Ring adapter. Press **Enter** when the cable is disconnected.

036-04

CE Action: Disconnect the cable from the Token-Ring adapter and replace it with a wrap plug. Press **Enter** when the wrap plug is installed.

036-05

Cause: Testing the Token-Ring adapter. This can take up to 2 minutes.

CE Action: Press **Req** to return to the extended diagnostics main menu.

Note: This test cannot terminate immediately.

036-06

Cause: No Token-Ring adapter errors were detected.

CE Action: Remove the wrap plug and reconnect the Token-Ring adapter cable to the 5494 and the Token-Ring network. Press **Enter** when the cable is connected.

036-07

Cause: No Token-Ring errors were detected. Because no wrap plug was installed on the Token-Ring adapter, a complete test was not possible. A 5494 failure can not have been detected.

CE Action: Press **Enter** to continue.

036-08

CE Action: Remove the wrap plug from the Token-Ring adapter. Press **Enter** to continue.

036-09

Cause: An error has been detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See "[SRCs in topic 3.2](#)". Then, press **Enter** to continue.

036-10

Cause: No Token-Ring errors were detected.

CE Action: Reconnect the Token-Ring adapter to the Token-Ring network. Press **Enter** after the cable is reconnected.

037-01

Cause: Is the Ethernet adapter connected to a functional Ethernet network?

CE Action:

- If **Yes**, type **1** and press **Enter**.
 - If **No**, type **0** and press **Enter**.
-

037-02

Cause: The Ethernet adapter is being tested; this can take up to two minutes.

CE Action: Press **Req** to return to the extended diagnostics main menu before the test is completed.

037-03

Cause: An Ethernet Adapter error has been detected.

CE Action: Make sure that the extended diagnostics test for the Ethernet adapter has been started from the CE main menu. Press **Alt+PF1** to access the CE main menu. Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See "["SRCs" in topic 3.2](#)". Then, press **Enter** to continue.

050-01

Cause: View 5494 error log.

CE Action: Press **Enter** to display the error most recently entered in the 5494 error log. See "[How to View the Error Log from Extended Diagnostics](#)" in topic [3.1.1](#) for instructions.

050-02

Cause: One or more entries in the 5494 error log do not have a valid time stamp. Asterisks (*) will be substituted for an incorrect date and time. The problem is probably due to an error that occurred with the 5494 clock when the error was logged. This problem does not prevent normal 5494 operation except that no time or date will be recorded for this error log entry.

CE Action: Press **Enter** to display the error most recently entered in the 5494 error log. See "[How to View the Error Log from Extended Diagnostics](#)" in topic [3.1.1](#) for instructions.

Subtopics:

- [3.1.1 How to View the Error Log from Extended Diagnostics](#)
-

3.1.1 How to View the Error Log from Extended Diagnostics

To access the information stored in the 5494 error log, imagine that the log is like a sheet of paper with one line used for each log entry. The most recent entry is located at the bottom of the paper.

At the top of the paper is an overlay with a clear window through which you can view a small portion of each error log entry at a time. You can move the overlay to the left or the right to view different information about a single entry, or up and down to view different error log entries. Consider the right-hand side of the LCD as the window. The left-hand side of the LCD contains a message code that indicates what you are seeing through the window.

Table 7. Format of the 5494 Error Log				
Entry Number	Date	Time	SRC (Slot)	Optional Status Bytes
(42/42)	dd mmm	hh:mm:ss	cccccc(s)	1 xx 2 xx ...

...
3/42	dd mmm	hh:mm:ss	cccccc(s)	1 xx 2 xx
2/42	dd mmm	hh:mm:ss	cccccc(s)	1 xx 2 xx
1/42	dd mmm	hh:mm:ss	<u>cccccc(s)</u>	1 xx 2 xx

The message codes 051-xx indicate the fields of information displayed on the 5494 LCD.

The LCD initially shows the SRC for the last entry in the 5494 error log (cccccc(s) in the example). Use the arrow keys to move the window to other entries and fields. A beep is sounded when the end of the error log has been reached.

Notes:

1. For hardware SRCs E00xxx, look up the last 3 digits in ["SRCs" in topic 3.2](#).
2. Four-digit SRCs will display as 6-digit SRCs with 2 leading zeros (example 000052).

In addition, you can use:

PF1

To display momentarily the count field for the entry currently displayed. When the same error occurs more than once, a count is incremented instead of creating a new error log entry. The date and time of the error log entry is that of the last occurrence.

PF2

To find the first entry for the current date being displayed. If the first entry for the current date is already being displayed, the first entry for the previous date will be displayed. In either case the date field will be displayed.

Alt+4

To enable display of additional status bytes associated with each error log entry. This information can be required by level 1 and 2 support personnel.

051-xx

Cause: The message codes 051-01 through 051-05 indicate which of several fields of the 5494 error log is being displayed on the right-hand side of the LCD.

Message Displays

051-01

The error count

051-02

The date

051-03

The time

051-04

The SRC (see notes)

051-05

Optional status byte information

CE Action: Use the **left** and **right arrows** to move between fields.

Notes:

1. For hardware SRCs E00xxx, look up the last 3 digits in "[SRCs](#)" in [topic 3.2](#).
 2. Four-digit SRCs will display as 6-digit SRCs with 2 leading zeros (for example, 000052).
-

052-01

Cause: The 5494 error log does not contain any entries.

CE Action: Press **Esc** to return to the main menu.

052-02

Cause: The 5494 error log contents have been corrupted. A test of the log has been run and no hardware failure was detected. The reason for the problem cannot be detected.

The log has been reinitialized and now contains no errors.

CE Action: Press **Esc** to return to the main menu.

052-03

Cause: The storage used to store the 5494 error log is defective.

CE Action: Look up the SRC displayed on the right-hand side of the LCD. See "[SRCs](#)" in [topic 3.2](#).

Note: You can continue to use the 5494, but error logging information can be unreliable.

060-01

Cause: The 2 numbers displayed on the right-hand side of the LCD indicate the number of storage corrections made to the SIMMs installed in the 5494.

CE Action:

- If you have just replaced a SIMM in the 5494, change the counters to zero by pressing **Clear**. Then, press **Esc** to return to the main menu.
- If you have not just replaced a SIMM, press **Esc** to return to the main menu.

099-01

Cause: A system reset request is in progress.

CE Action: Complete the reset request sequence or press **Esc** to cancel the request.

099-02

Cause: The system reset request is complete.

CE Action: This restarts the 5494 and interrupts all current activity.

Attention: Notify the users connected to this 5494 that their sessions will be interrupted.

Press **Enter** to continue. Press **Esc** to cancel the request.

099-03

Cause: A reset is in progress.

CE Action: None.

199

Cause: A hardware failure has occurred.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See "["SRCs" in topic 3.2.](#)

200

Cause: Request code for displaying 5494 status information.

CE Action: See "[Displaying 5494 Online Status Information](#)" in topic [6.2.1](#).

201 through 220

Cause: Codes displayed as a result of a request for information.

CE Action: Press **Esc** to clear the information from the LCD.

While data with these message codes is displayed, normal errors that occur will not display.

230

Cause: Request code to restart LAN communications.

CE Action: Press **Enter** to activate or **ESC** to clear.

290

Cause: Request code to enter concurrent diagnostic mode.

CE Action: Press **Enter** to activate or **ESC** to clear.

291

Cause: Request code to exit concurrent diagnostic mode.

CE Action: Press **Enter** to activate or **ESC** to clear.

| **300 through 320**

| **Cause:** The process for copying 5494 configuration data or a bridge
| filter file is in progress.

CE Action: See "[Copying 5494 Configuration or Filter Files from Diskette](#)" in topic [6.2.23](#) to continue, or press **Esc** to end the operation.

351

Cause: A system diskette problem was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See "[SRCs](#)" in topic [3.2](#).

352

Cause: A configuration problem was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See "[SRCs](#)" in topic [3.2](#).

355

Cause: A diskette write-protected error was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See ["SRCs" in topic 3.2](#).

356

Cause: A diskette write error was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See ["SRCs" in topic 3.2](#).

359

Cause: Incorrect configuration data was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See ["SRCs" in topic 3.2](#).

361

Cause: A configuration problem was found.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See ["SRCs" in topic 3.2](#).

363

Cause: An AS/400 system communication problem was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action.

364

Cause: A Token-Ring or Ethernet adapter problem was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See ["SRCs" in topic 3.2](#).

410

Cause: A physical link error was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See ["SRCs" in topic 3.2](#).

420

Cause: An X.25 network error was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See "["SRCs" in topic 3.2.](#)

430

Cause: An X.21 network error was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See "["SRCs" in topic 3.2.](#)

440

Cause: A V.25 bis error was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See "["SRCs" in topic 3.2.](#)

450

Cause: An SNA communication error was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See "["SRCs" in topic 3.2.](#)

460

Cause: A LAN error was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See "["SRCs" in topic 3.2.](#)

470

Cause: A frame-relay error was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See "["SRCs" in topic 3.2.](#)

| **480**

| **Cause:** A Frame Relay Token-Ring Bridge error has been detected.

| **CE Action:** Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See "["SRCs" in topic 3.2](#)".

710

Cause: A code change file problem was detected.

CE Action: Look up the SRC displayed on the right-hand side of the LCD and perform the indicated action. See "["SRCs" in topic 3.2](#)".

720

Cause: A failure in the operational code has been detected.

CE Action: Write down the SRC. Then, contact 5494 Support and report a code problem.

721

Cause: The controller attempted to write an error dump file to the 5494 System Diskette because of a failure in the operational microcode. However, the 5494 System Diskette was damaged or missing.

CE Action: Write down the SRC displayed on the operator panel. Insert a 5494 System Diskette into the controller and press **Enter** to attempt to write the error dump file again. Contact 5494 support and report the SRC.

The 5494 reinitializes after the error dump file is written.

Pressing **Esc** bypasses the writing of the error dump file, and the controller immediately reinitializes if a 5494 System Diskette is in the controller.

722

Cause: The controller attempted to write an error dump file to the 5494 System Diskette because of a failure in the operational microcode. However, the 5494 System Diskette was write-protected.

Note: The 5494 reinitializes automatically after approximately two minutes if no action is taken.

CE Action: Write down the SRC displayed on the operator panel. Close the write-protect tab on the 5494 System Diskette. Press **Enter** to attempt to write to the error dump file again. Contact 5494 support and report the SRC.

The 5494 reinitializes after the error dump file is written. Pressing **Esc** bypasses the writing of the error dump file, and the controller immediately reinitializes.

730

Cause: A failure in the operational code has been detected. The 5494 has reinitialized itself and resumed operations.

CE Action: Write down the SRC including the asterisks (**). Then contact 5494 Support and report a code problem.

999

Cause: An incorrect request code has been entered by the user.

CE Action: Press **Esc** to clear. To try the operation again, press **Req**, type a valid request code, and press **Enter**. See "[Concurrent Mode from the Operator Panel \(Online\)](#)" in topic [6.2](#) for a list of the valid request codes.

3.2 SRCs

The following SRCs can appear on the left-hand side or right-hand side of a workstation screen. Many of them can also appear on the right-hand side of the 5494 LCD, accompanied by a message code on the left.

SRCs are displayed on the right-hand side of the LCD and indicate the failure of a FRU or an action required to resolve a problem. SRCs can range from 3 to 6 digits and can be generated by a POST, extended diagnostics, or the operational code.

0000

Cause: Help key not allowed.

You pressed Help. However, either no SRC was displayed or the application program does not support Help.

CE Action: At the workstation, press **Error Reset**. Continue entering information or refer to the meaning for the previously displayed SRC and do the recovery procedure.

0001

Cause: Keyboard overrun.

A keyboard overrun occurred because the 5494 could not keep up with the rate at which you were entering information. The last character entered was not recognized. If type ahead has been enabled, your buffer is full.

CE Action: At the workstation, press **Error Reset** and continue entering information.

0002

Cause: Incorrect scan code.

The 5494 received an incorrect scan code from the workstation's keyboard. Either the scan code is incorrect for the keyboard at the workstation, or an error occurred in translating the keystroke.

CE Action: At the workstation, press **Error Reset** and try to continue entering the data. If the error occurs again, check the language code entered in the configuration for the workstation's keyboard. If the keyboard language code entered in the configuration is correct, contact the workstation service representative and report the problem.

0003

Cause: Command or PF key is not valid.

You pressed a Command key sequence, a PF key that is not supported or not valid for the current field, or the Alt key sequence is not valid.

CE Action: At the workstation, press **Error Reset** and continue, using the correct keys.

0004

Cause: Data not allowed in this field.

You tried to enter data from the keyboard into a field where only an entry from a magnetic stripe reader or a light pen is allowed.

CE Action: At the workstation, press **Error Reset**. Move the cursor to a field where data from the keyboard can be entered.

0005

Cause: Cursor in protected area of display.

You have tried to enter data; however, the cursor is not in an input field on the display. Data cannot be entered in a protected area of the display.

CE Action: At the workstation, press **Error Reset** and move the cursor to a valid input field.

0006

Cause: Key following Sys Req Key not valid.

You pressed a key that is not valid after the Sys Req Key and before the Enter/Rec Adv or Error Reset.

CE Action: At the workstation, press **Error Reset** and use a valid key sequence.

0007

Cause: Mandatory entry field; you must enter data.

There is at least one field on the screen into which you must enter data before the screen can be changed or processed. (The cursor goes to the first character position of the first mandatory entry field.)

CE Action: At the workstation, press **Error Reset** and enter the required data.

0008

Cause: This field must have alphabetic characters.

You tried to enter nonalphabetic characters into a mandatory alphabetic field. Valid characters are A through Z, space, comma (,), period (.), hyphen (-), apostrophe ('), and Dup. Dup can be used to duplicate these characters in the field.

CE Action: At the workstation, press **Error Reset** and continue, using valid characters.

0009

Cause: This field must have numeric characters.

You tried to enter nonnumeric characters into a numeric-only field. Valid characters are 0 through 9, space, comma (,), period (.), plus (+), minus (-), and Dup. Dup can be used to duplicate these characters in the field.

CE Action: At the workstation, press **Error Reset** and continue, using valid characters.

0010

Cause: Only characters 0-9 are allowed.

The key pressed is not valid for a signed numeric field. Valid entries are 0 through 9 and the Dup key.

CE Action: At the workstation, press **Error Reset** and continue, using valid characters.

0011

Cause: You tried to enter data into the last position of a signed numeric field.

CE Action: At the workstation, press **Error Reset**. Make sure that the data is correct, and then exit the field by using the Field -, Field +, or Field Exit key.

0012

Cause: Insert mode; no room to insert data.

There is no room to insert the data in this field. Either there is no more room in the field or the cursor is in the last position of the field.

Do not use insert mode to change data or to enter the last character in this field.

CE Action: At the workstation, press **Error Reset**. Correct the field, if necessary, and continue.

0013

Cause: Insert mode; only data keys permitted.

You tried to exit a field while the workstation was still in insert mode.

CE Action: At the workstation, press **Error Reset** and exit the field normally.

0014

Cause: Must fill field to exit.

You pressed a function key that would move the cursor out of this field. However, the requirements of this mandatory-fill field were not met. A mandatory-fill field must be completely filled or left blank.

CE Action: At the workstation, press **Error Reset**. Enter data to fill the entire field, or move the cursor to the start of the field and use Field -, Field +, or Field Exit to erase the contents of the field.

0015

Cause: Modulo 10 or 11 check digit error. You entered data into a self-check field, and the number you entered and the check digit do not compare.

CE Action: At the workstation, press **Error Reset**. Make sure that you have entered the number and check digit correctly. If you entered them correctly, make sure that the number is valid for a self-check field. If the numbers you are using are valid but this error still occurs, contact the workstation service representative and report the problem.

0016

Cause: Field - not valid in this field.

You pressed Field - when the cursor was not in a numeric-only, digits-only, or signed numeric field.

CE Action: At the workstation, press **Error Reset**. Continue to enter data or press **Field Exit** to exit the field.

0017

Cause: Mandatory-fill field; key pressed is not valid.

You pressed the Field -, Field +, or Field Exit key. However, the requirements for this mandatory-fill field were not met. A mandatory-fill field must be completely filled unless you exit it from the first position of the field.

CE Action: At the workstation, press **Error Reset**. Enter data to the end of the field or move the cursor to the start of the field and use Field -, Field +, or Field Exit to erase the contents of the field.

0018

Cause: Key used to exit this field not valid.

The cursor is in a right-adjust or field-exit-required field, and you pressed a data key. Use Field Exit to exit this field.

CE Action: At the workstation, press **Error Reset**. Press **Field Exit** to exit this field.

0019

Cause: Dup or Field Mark not permitted in this field.

You pressed Dup or Field Mark. However, the key is not permitted in this field.

CE Action: At the workstation, press **Error Reset**. Continue without using Dup or Field Mark in this field.

0020

Cause: Function key not valid for right-adjust field.

You pressed a function key that is not permitted in this field. Press Field -, Field +, or Field Exit to exit this field before pressing one of the following function keys:

- Test Req
- Clear
- Enter/Rec Adv
- Print
- Help
- Roll
- Home (when the cursor is in the home position)
- PF/Cmd1-24
- Sys Req
- Rec Backspace.

CE Action: At the workstation, press **Error Reset**. The cursor is in the same position that it was when you pressed the Function key. Continue by pressing Field -, Field +, or Field Exit.

0021

Cause: Must enter data in mandatory entry field.

The cursor is positioned in a mandatory entry field. You must enter data into a mandatory entry field before you can exit the field by pressing the Field -, Field +, or Field Exit key. You can exit from any position if no data is entered.

CE Action: At the workstation, press **Error Reset** and enter the required data.

0022

Cause: An AS/400 system error occurred. The status of the current field is not known. This error can occur during an insert or delete operation.

CE Action: At the workstation, press **Error Reset**. Check the display screen to determine if the insert or delete function was completed correctly. If it was not, complete it correctly.

0023

Cause: Hexadecimal mode; entry not valid.

The workstation is in hexadecimal mode but the first key pressed was not a character 4 through 9 or A through F, or the second key pressed was not a character 0 through 9 or A through F.

This error also occurs when a hexadecimal code is used in a numeric-only, signed-numeric, digits-only, alpha-only, or I/O field.

CE Action: At the workstation, press **Error Reset**. Continue by pressing the correct keys.

0024

Cause: Decimal field; entry not valid.

You pressed a key that is not valid. Only characters 0 through 9 and Dup (if specified in the field format word) are allowed in this field.

CE Action: At the workstation, press **Error Reset** and continue by entering digits in this field.

0026

Cause: Field - entry not allowed.

You pressed Field - to exit a numeric-only field, but the last position of the field was not a character 0 through 9.

CE Action: At the workstation, press **Error Reset**. Correct the last position of this field or exit the field by using a key other than Field - (for example, Field + or Field Exit).

0027

Cause: Cannot use undefined key.

You pressed a key that is either blank or not defined for your workstation.

CE Action: At the workstation, press **Error Reset** and continue, using valid keys.

0029

Cause: Diacritic character not valid.

The second key pressed during a diacritic key function did not produce a valid diacritic character.

CE Action: At the workstation, press **Error Reset** and enter a valid combination.

0031

Cause: Data buffer overflow.

The data received from the magnetic stripe reader (MSR) card was longer than the maximum allowed.

CE Action: At the workstation, press **Error Reset** and use another MSR card.

0032

Cause: MSR error.

The data from the Magnetic Stripe Reader (MSR) card was not received correctly.

CE Action: At the workstation, press **Error Reset** and pass the card through the MSR again. If the error is still present after several attempts, contact the MSR service representative and report the problem.

0033

Cause: MSR data not authorized.

The data received from the Magnetic Stripe Reader (MSR) card was secured data (for example, an operator ID card), and this field was not specified for secured data.

CE Action: At the workstation, press **Error Reset** and continue using a correct MSR card.

0034

Cause: MSR data exceeds length of field.

The data received from the Magnetic Stripe Reader (MSR) card will not fit into the active input field.

CE Action: At the workstation, press **Error Reset**. Pass another card through the MSR. If the error is still present, contact the AS/400 system operator and report a possible programming error.

0035

Cause: MSR error.

The card to be read was incorrectly inserted into the Magnetic Stripe Reader (MSR), was incorrectly made, or is damaged.

CE Action: At the workstation, press **Error Reset**. Put the card to be read through the MSR again. If the error is still present after several attempts, try another MSR or test the MSR card to make sure that the problem is not caused by a defective card. If the error is still present, contact the MSR service representative and report the problem.

0036

Cause: Cursor select not allowed in field-exit-required state.

You pressed Cursor Select while in field-exit-required state.

CE Action: At the workstation, press **Error Reset**. Complete the current field or use Field Exit or Field Backspace to position the cursor.

0037

Cause: You pressed Cursor Select in a nonselectable field.

CE Action: At the workstation, press **Error Reset**. Then, position the cursor on a field where the cursor select function is valid. For more information, refer to your workstation operator's guide.

0038

Cause: Light pen and MSR not allowed.

You attempted to use the selector light pen or Magnetic Stripe Reader (MSR) while using text processing. These functions are not valid for text processing.

CE Action: At the workstation, press **Error Reset**.

0040

Cause: The modem or data circuit-terminating equipment (DCE) is not ready for one of the following reasons:

- The data set ready (DSR) line is inactive (EIA 232D or V.35 interface).
- The modem or DCE is not ready (X.21 interface).
- The communication cable is not connected securely at both ends.

CE Action:

1. Verify that the:

- 5494 cable to the modem or DCE is securely connected
- Modem or DCE is turned **ON**
- Communication line is attached to the modem.

If you find no problems, continue with the next step.

2. **For a new or changed installation or configuration:** Verify that the 5494 configuration and the equipment match. (See "[Verifying the 5494 Configuration](#)" in topic 4.4.) If the communication mode is synchronous data link control (SDLC), pay particular attention to the setting for the communications line type. Valid selections are:

- Leased line
- Switched line
- Switched line/V.25 bis.

If the communications line type is correct, continue with step 3. If not, correct the setting and try the job again. (To correct the setting, refer to the *IBM 5494 Remote Control Unit User's Guide* for instructions.)

3. **For an existing, unchanged installation or configuration:** Verify that the problem is not in the 5494 or the 5494 communication interface cable. Turn the 5494 power **OFF** (0) and then back **ON** (1) to run POST. During POST, the 5494 runs automatic cable wrap to the end of the 5494 communication cable to verify that the 5494 circuitry and cable are good. Wait for about 30 seconds after the Ready LED is lit.

- If a different SRC is displayed, follow the CE action for that SRC.
- If the same SRC is displayed, automatic cable wrap has determined that the problem is in the modem or the network. Ask the customer to contact one of the following:
 - The network service representative and report that the network is out of service, or that no signal is being received from the modem or DCE.
 - The modem service representative and report that the DSR line from the modem is inactive when it should be active.
- If no SRC is displayed, the problem could be due to a temporary condition. Retry the job. If the problem reoccurs, ask the customer to report it to the modem/DCE or network representative.

0041

Cause: (X.25) Idle condition has been detected. The receive line was idle for 15 or more contiguous bit-times.

CE Action:

1. Verify that the:

- 5494 cable to the modem or DCE is securely connected
- Modem or DCE is turned **ON**
- Communication line is attached to the modem.

If you find no problems, continue with the next step.

2. Verify that the problem is not in the 5494 or the 5494 communication interface cable. Turn the 5494 power **OFF (0)** and then back **ON (1)** to run POST. During POST, the 5494 runs automatic cable wrap to the end of the 5494 communication cable to verify that the 5494 circuitry and cable are good. Wait for about 30 seconds after the Ready LED is lit.

- If a different SRC is displayed, follow the CE action for that SRC.
- If the same SRC is displayed, automatic cable wrap has determined that the problem is in the network. Ask the customer to contact the network service representative and report that the indicate lines (X.21 interface) or the received line signal detector (RLSD) line (EIA 232D or V.35 interface) is inactive when it should be active.
- If no SRC is displayed, the problem could be due to a temporary condition. Retry the job. If the problem reoccurs, ask the customer to report it to the modem/DCE or network representative.

0042

Cause: The receive clock signal is not being received from the modem or data circuit-terminating equipment (DCE).

CE Action: Either the receive clock or transmit clock signal from the modem or DCE is failing.

1. Verify that the:

- 5494 cable to the modem or DCE is securely connected
- Modem or DCE is turned **ON**
- Communication line is attached to the modem.

If you find no problems, continue with the next step.

2. Verify that the problem is not in the 5494 or the 5494 communication interface cable. Turn the 5494 power **OFF (0)** and then back **ON (1)** to run POST. During POST, the 5494 runs automatic cable wrap to the end of the 5494 communication cable to verify that the 5494 circuitry and cable are good. Wait for about 30 seconds after the Ready LED is lit.

- If a different SRC is displayed, follow the CE action for that SRC.
- If the same SRC is displayed, automatic cable wrap has determined that the problem is in the modem or the network. Ask the customer to report the problem to the modem or communication network service representative.
- If no SRC is displayed, the problem could be due to a temporary condition. Retry the job. If the problem reoccurs, ask the customer to report it to the modem/DCE or network representative.

0043

Cause: The 5494 attempted to disconnect from the line, but the data set ready (DSR) signal was not deactivated by the modem or data circuit-terminating equipment (DCE).

CE Action:

1. Verify that the:

- 5494 cable to the modem or DCE is securely connected
- Modem or DCE is turned **ON**
- Communication line is attached to the modem.

If you find no problems, continue with the next step.

2. **For a new or changed installation or configuration:** Verify that the 5494 and DCE or modem are configured for the correct communications line type. (See ["Verifying the 5494 Configuration" in topic 4.4](#).) Pay particular attention to the configuration for:

- Line type
- Connection method.

If the configuration is correct, continue with step 3. If not, correct the setting and try the job again.

3. **For an existing, unchanged installation or configuration:** Verify that the problem is not in the 5494 or the 5494 communication cable interface. Turn the 5494 power **OFF** (0) and then back **ON** (1) to run POST. During POST, the 5494 runs automatic cable wrap to the end of the 5494 communication cable to verify that the 5494 circuitry and cable are good. Wait for about 30 seconds after the Ready LED is lit.

- If a different SRC is displayed, follow the CE action for that SRC.
- If the same SRC is displayed, automatic cable wrap has determined that the problem is in the modem or the network. Ask the customer to report the problem to the modem/DCE or network service representative.
- If no SRC is displayed, the problem could be due to a temporary condition. Retry the job. If the problem reoccurs, ask the customer to report it to the modem/DCE or network representative.

0044

Cause: (Switched lines) This error indicates that no valid data has been received for 30 seconds. The 5494 disconnected the line.

| (LAN or Frame Relay) The 5494 did not receive a valid frame before the Ti timer expired.

CE Action:

1. Verify that the:

- 5494 cable to the modem or DCE is securely connected
- Modem or DCE is turned **ON**
- Communication line is attached to the modem.

If you find no problems, continue with the next step.

2. For a new or changed installation or configuration:

- a. (SDLC) Verify that the 5494 is configured correctly. (See "[Verifying the 5494 Configuration](#)" in topic 4.4.) Pay particular attention to the setting for the communications line type. Valid entries are:

- Leased line
- Switched line
- Switched line/V.25 bis.

| (LAN or Frame Relay) Verify the 5494 configuration. Pay particular attention to the Ti Timer. (See "[Verifying the 5494 Configuration](#)" in topic 4.4.)

- b. If the configuration is correct for the system, continue with step 3. If not, correct the setting and try the job again. (To correct the setting, refer to the *IBM 5494 Remote Control Unit User's Guide*.)

3. For an existing, unchanged installation or configuration: Verify that the problem is not in the 5494 or the 5494 communication interface cable. Turn the 5494 power **OFF** (0) and then back **ON** (1) to run POST. During POST, the 5494 runs automatic cable wrap to the end of the 5494 communication cable to verify that the 5494 circuitry and cable are good. Wait for 30 seconds after the Ready LED is lit.

- If a different SRC is displayed, follow the CE action for that SRC.
- If the same SRC is displayed:

(Switched line) If the 5494 is attached on a switched line, ask the customer to contact the AS/400 system operator and report that the problem is with the network, AS/400 system, or modem/DCE.

| (LAN or Frame Relay) If the 5494 is attached to a Token-Ring or Ethernet network, ask the customer to try increasing the Ti value in the 5494 configuration. If the error persists,
| ask the customer to contact the LAN Administrator.

- If no SRC is displayed, the problem could be due to a temporary condition. Retry the job. If the problem reoccurs, ask the customer to report it to the modem/DCE or network representative.

0045

Cause: (X.25) Data circuit-terminating equipment (DCE) will not activate. Either a disconnect mode (DM) or a disconnect (DISC) command was received during the link setup sequence.

CE Action:

1. Verify that the:

- 5494 cable to the modem or DCE is securely connected
 - Modem or DCE is turned **ON**
 - Communication line is attached to the modem.
2. Restart communication and try the procedure again. If this SRC occurs again, the probable cause is a modem/DCE or network failure. Ask the customer to report to the X.25 network representative that a DISC or DM was received during link setup.

0046

Cause: (X.25 or LAN) Frame reject received. The 5494 received a frame reject (FRMR) from the network, indicating that an error was detected in the last frame transmitted.

CE Action:

1. Verify that the:
 - 5494 cable to the modem or DCE is securely connected
 - Modem or DCE is turned **ON**
 - Communication line is attached to the modem.

If no problem is found, continue with the next step.

2. There are 3 sense bytes for this SRC, which preserve the contents of the FRMR information (I)-field. While this SRC is being displayed on the 5494 operator panel, press the **right arrow** (>) on the keypad to display the sense bytes for the 0046 SRC.
3. Record this SRC and the sense bytes that are displayed. Ask the customer to contact the network service representative and report this information.

0047

Cause: An unexpected disconnect mode (DM) or a disconnect (DISC) command was received while in information transfer state.

CE Action:

1. Verify that the:
 - 5494 cable to the modem or DCE is securely connected
 - Modem or DCE is turned **ON**
 - Communication line is attached to the modem.

If no problem is found, continue with the next step.

2. Restart communication and try the failing operation again. If this SRC occurs again, the probable cause is a modem/DCE or network failure. Report to the customer that the network is sending a DISCONNECT command or DM response to the 5494 when the 5494 is in information transfer state.

0048

Cause: (X.25) An unexpected, unnumbered acknowledgment (UA) frame was received.

CE Action:

1. Verify that the:

- 5494 cable to the modem or DCE is securely connected
- Modem or DCE is turned **ON**
- Communication line is attached to the modem.

2. If no problem is found, restart communication and try the job again.

If this SRC occurs again, ask the customer to contact the network service representative and report the problem.

0049

Cause: (LAN) A set asynchronous balance mode extended (SABME) was received while the 5494 was in information transfer state.

CE Action: Restart communication and try the job again. If the problem persists, contact the LAN Administrator and report the problem.

0050

Cause: Error in ready for sending (RFS) signal, also known as the clear to send (CTS) signal, received from the modem or data circuit-terminating equipment (DCE). This error is posted when one of the following has occurred:

- The RFS line is inactive for up to 30 seconds while the ready to send (RTS) line is active.
- The RFS line is active when the RTS line is inactive (except during V.25 bis call establishment).

CE Action:

1. Verify that the:

- 5494 cable to the modem or DCE is securely connected
- Modem or DCE is turned **ON**
- Communication line is attached to the modem.

2. If no problem is found, and the 5494 is attached to an X.25 network, go to step [4](#).

3. For a new or changed configuration or installation:

- a. Make sure that the following 5494 configuration settings are correct for the system and match the configuration for the modem. (See ["Verifying the 5494 Configuration" in topic 4.4](#).)

- Half-duplex or duplex
- Multipoint or point-to-point.

b. If the settings are correct, continue with step [4](#). If not, correct the settings and try the job again.

4. For an existing, unchanged installation or configuration: Verify that the problem is not in the 5494 or the 5494 communication interface cable. Turn the 5494 power **OFF (0)** and then back **ON (1)** to run POST. During POST, the 5494 runs automatic cable wrap to the end of the 5494 communication cable to verify that the 5494 circuitry and cable are good. Wait for about 30 seconds after the Ready LED is lit.

- If a different SRC is displayed, follow the CE action for that SRC.
- If the same SRC is displayed, automatic cable wrap determined that the problem is in the DCE or modem. Ask the customer to contact the modem or DCE service representative and report that the RFS signal received from the modem or DCE is not responding correctly to the RTS signal sent from the 5494.
- If no SRC is displayed, the problem could be due to a temporary condition. Retry the job. If the problem reoccurs, ask the customer to report it to the modem/DCE or network representative.

0051

Cause: The transmit clock from the modem or data circuit-terminating equipment (DCE) failed during a transmit operation.

CE Action:

1. Verify that the:

- 5494 cable to the modem or DCE is securely connected
- Modem or DCE is turned **ON**
- Communication line is attached to the modem.

2. Verify that the problem is not in the 5494 or the 5494 communication interface cable. Turn the 5494 power **OFF (0)** and then back **ON (1)** to run POST. During POST, the 5494 runs automatic cable wrap to the end of the 5494 communication cable to verify that the 5494 circuitry and cable are good. Wait for about 30 seconds after the Ready LED is lit.

- If a different SRC is displayed, follow the CE action for that SRC.
- If the same SRC is displayed, automatic cable wrap determined that the problem is in the DCE or modem. Ask the customer to contact the DCE or modem service representative and report that the transmit clock signal from the DCE or modem is failing.
- If no SRC is displayed, the problem could be due to a temporary condition. Retry the job. If the problem reoccurs, ask the customer to report it to the modem/DCE or network representative.

0052

Cause: The link adapter hardware failed to complete a transmit operation within 30 seconds, but no transmit clock or other modem or DCE signal failure was detected.

CE Action:

1. Verify that the:

- 5494 cable to the modem or DCE is securely connected
- Modem or DCE is turned **ON**
- Communication line is attached to the modem.

2. Verify that the problem is not in the 5494 or the 5494 communication interface cable. Turn the 5494 power **OFF (0)** and then back **ON (1)** to run POST. During POST, the 5494 runs automatic cable wrap to the end of the 5494 communication cable to verify that the 5494 circuitry and cable are good. Wait for about 30 seconds after the Ready LED is lit.

- If a different SRC is displayed, follow the CE action for that SRC.
- If the same SRC is displayed, automatic cable wrap determined that the problem is in the modem or the network. Ask the customer to contact 5494 Support and report the problem.
- If no SRC is displayed, the problem could be due to a temporary condition. Retry the job. If the problem reoccurs, ask the customer to report it to the modem/DCE or network representative.

0053

Cause: (X.25) The retry count has expired. No acknowledgment of a transmission was received within the allowed timeout. Timeout retry count (N2) and retry interval (T1) are specified in the 5494 configuration.

CE Action:

1. Verify that the:

- 5494 cable to the modem or DCE is securely connected
- Modem or DCE is turned **ON**
- Communication line is attached to the modem.

If no problem is found, continue with the next step.

2. **For a new or changed installation or configuration:** Make sure that the customer has verified that the 5494 timeout retry count (N2) and retry interval (T1) values are consistent with the values recommended by the X.25 network representative.

3. **For an existing/unchanged installation or configuration:** Verify that the problem is not in the 5494 or the 5494 communication interface cable. Turn the 5494 power **OFF (0)** and then back **ON (1)** to run POST. During POST, the 5494 runs automatic cable wrap to the end of the 5494 communication cable to verify that the 5494 circuitry and cable are good. Wait for about 30 seconds after the Ready LED is lit.

- If a different SRC is displayed, follow the CE action for that SRC.
- If the same SRC is displayed, automatic cable wrap determined that the problem is in the modem or network. Ask the customer to contact the X.25 network service representative and report the problem.

-
- If no SRC is displayed, the problem could be due to a temporary condition. Retry the job. If the problem reoccurs, ask the customer to report it to the modem/DCE or network representative.

0054

Cause: Frame reject (FRMR) sent. The 5494 sent a link-level FRMR response to the AS/400 system after receiving a data link control (DLC) or link access procedure balanced (LAPB) command that was not valid. Sense bytes S1, S2, and S3 preserve the contents of the FRMR I-field.

CE Action:

1. Verify that the:

- 5494 cable to the modem or DCE is securely connected
- Modem or DCE is turned **ON**
- Communication line is attached to the modem.

If no problem is found, continue with the next step.

2. There are 3 sense bytes for this SRC, which preserve the contents of the FRMR information (I)-field. While this SRC is being displayed on the 5494 operator panel, press the **right arrow** (>) on the keypad to display the sense bytes for the 0054 SRC.

3. Record this SRC and the sense bytes that are displayed. Ask the customer to contact the network service representative and report this information.

0055

Cause: The 5494 ran a cable wrap and determined that the communication cable is not attached to the 5494.

CE Action: Determine whether the communication cable is securely attached to the 5494.

- If the cable is securely attached to the 5494, the cable is defective. Replace the cable.
- If the cable is not securely attached to the 5494, attach it, turn the 5494 power **OFF (0)** and back **ON (1)**, and then try the operation again.

0056

Cause: The link between the AS/400 system and the 5494 was lost. A bridge failure has occurred, the AS/400 system has varied off the line, a node in the SNA subarea network has failed, or the network has failed.

CE Action: Verify the configuration parameters, making sure that sufficient time has been allowed for delays due to the network. Check the T1 timer expired count (operator panel REQ 205 panel 18, or C9 screen) and increase the T1 timer value in the configuration if necessary. If the problem persists, contact the Network Administrator.

If you are viewing the AS/400 error log, see "[Communication Error Counters \(60 through 6D\)](#)" in topic **B.9**. Communication errors (60 through 6D) and statistical counters (6E and 6F) are described beginning in that topic.

The following SRCs will display on the 5494 operator panel and attached workstations.

0060

Cause:

- **Ideographic support SRC:** You attempted to enter alphanumeric data into a field that accepts only double-byte data characters.
- **Bidirectional support SRC:** You pressed a key that is not valid within an embedded segment. The cursor is within an embedded segment or on an end reverse control character.

CE Action: For an ideographic error, ask the customer to press **Error Reset** at the workstation and enter the correct information into the field.

For a bidirectional error, ask the customer to press **Error Reset** at the workstation.

0061

Cause:

- **Ideographic support SRC:** You attempted to enter a double-byte character into a field that accepts only alphanumeric data.
- **Bidirectional support SRC:** You pressed a key that is not valid outside an embedded segment. The cursor is outside an embedded segment or on a begin reverse control character.

CE Action: For an ideographic error, ask the customer to press **Error Reset** and enter the correct information at the workstation.

For a bidirectional error, ask the customer to press **Error Reset** at the workstation.

0062

Cause: You attempted to change the data type, but the cursor is not in an open field or in the first position of an ideographic either field.

CE Action: Ask the customer to press **Error Reset** and enter the correct information into the field at the workstation.

0063

Cause: You entered an ideographic character that is not valid while operating in Alternate Entry mode.

CE Action: Ask the customer to press **Error Reset** and enter the correct information in the field at the workstation.

0064

Cause: You pressed a key that is not valid for the current keyboard mode.

CE Action: Ask the customer to press **Error Reset** and enter the correct information in the field at the workstation.

0065

Cause: The cursor is positioned in a column reserved for shift-out or shift-in characters.

CE Action: Ask the customer to press **Error Reset** and enter the correct information in the field at the workstation.

0066

Cause: Repeat key not valid. The cursor is positioned under a shift character or attribute character, or at the first valid entry character position of an input field. Only data characters can be repeated at these positions.

CE Action: Ask the customer to press **Error Reset** and enter the correct information in the field at the workstation.

0067

Cause: The workstation extension character RAM is full. Any additional extension characters display as special default characters.

CE Action: Ask the customer to press **Error Reset** and enter the correct information in the field at the workstation.

0068

Cause: The output data stream to the 5494 is not valid for extension characters. Any additional extension characters display as special default characters.

CE Action: Ask the customer to press **Error Reset** and enter the correct information in the field at the workstation.

0069

Cause:

- **Ideographic support SRC:** The output data stream to the 5494 contains extension characters that are not valid or undefined. Any additional extension characters display as special default characters.

- **Bidirectional support SRC:** The Automatic Shape Determination process cannot insert a terminating character (tail).

CE Action: For an ideographic error, at the workstation, ask the customer to press **Error Reset** and enter the correct information in the field. For a bidirectional error, ask the customer to press **Error Reset** at the workstation.

0070

Cause: An error occurred during the word spill function or the carrier return function.

CE Action: Ask the customer to press **Error Reset** at the workstation. For more information, press the **Help** key. If the customer is using DisplayWrite a message similar to the information provided here is displayed. The SRC is displayed only after the Help key is pressed.

0071

Cause: You attempted a start copy, move, or delete text operation while one of the previous operations was already in progress.

CE Action: At the workstation, ask the customer to press **Error Reset** and try the operation again when the operation in progress is complete. If the customer is using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after the Help key is pressed.

0072

Cause: The key pressed is not valid when the cursor is in the current position.

CE Action: At the workstation, ask the customer to press **Error Reset**, move the cursor to the correct position, and try again. If the customer is using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after the Help key is pressed.

0073

Cause: An attempt was made to delete or replace an instruction or format change when the general prompt function was not active.

CE Action: At the workstation, ask the customer to press **Error Reset** and press the general prompt command key to delete or replace instruction and format change characters. For more information, press the **Help** key. If the customer is using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after the Help key is pressed.

0074

Cause: A key was pressed that is not valid when using the general prompt function.

CE Action: Ask the customer to press **Error Reset** at the workstation. If the customer is using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after the Help key is depressed.

0075

Cause: The find function failed to find the keyed characters.

CE Action: At the workstation, ask the customer to press **Error Reset** and try the operation again when the operation in progress is complete. If the customer is using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after the Help key is pressed.

0076

Cause: The insert function failed because the AS/400 system has not processed the text on the screen.

CE Action: At the workstation, ask the customer to press **Error Reset**, wait until the AS/400 system processes the text on the screen, and try again. If the customer is using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after the Help key is pressed.

0077

Cause: You either pressed a function key that is not valid at this time, or tried to use a 3270 keyboard function while in word processing mode.

CE Action: Ask the customer to press **Error Reset** at the workstation. If the customer is using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after the Help key is pressed.

0078

Cause: The required scale line is not defined for your workstation. There is an error in the application program.

Note: If you are using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after the Help key is pressed.

CE Action: Contact the application programmer or supplier for the application program and report the error.

0081

Cause: Too many workstations are attached to the 5494. The 5494 with either a Token-Ring or Ethernet adapter installed allows a maximum of 80 devices.

CE Action: Determine which workstations are extra and disconnect them.

0082

Cause: Keyboard function is not valid within a selection field. The functions that are not valid include Dup, Erase EOF, and Field Mark.

CE Action: Ask the customer to press **Error Reset** and enter the correct information in the field at the workstation.

0083

Cause: A selection character is not valid. The numeric or mnemonic character entered by the user is not associated with any of the choices defined within the current selection field.

CE Action: Ask the customer to press **Error Reset** and enter the correct information in the field at the workstation.

0084

Cause: An attempt has been made to select an unavailable selection field.

CE Action: Ask the customer to press **Error Reset** and enter the correct information in the field at the workstation.

0087

Cause: (X.25) A flow control entry error has occurred. The 5494 configuration settings for Flow Control Negotiation and Manual Options Allowed are not compatible. If the configuration setting for Flow Control Negotiation is permitted, then Manual Options must be allowed.

CE Action: Verify the 5494 configuration. Pay special attention to the settings for flow control negotiations and manual options.

If no problem is found, ask the customer to report X.25 network problems to the X.25 network service representative.

0089

Cause: One or more fields required for the operation of the 5494 are blank. When you press **Enter**, the 5494 checks for blank fields and moves the cursor to the first blank.

CE Action: Press **Error Reset** and fill in the required field.

008A

Cause: One or more fields contain an embedded blank. When you press **Enter**, the 5494 checks for embedded blanks and moves the cursor to the first embedded blank.

CE Action: Press **Error Reset** and remove the embedded blank.

008B

Cause: Too many different keyboard codes have been used. A maximum of four different keyboard codes can be selected (the master country and three others).

CE Action: Contact the customer's system planner to determine which four keyboard codes to use, and then ask the customer to correct the configuration.

| **008C**

| **Cause:** Duplicate values error.

| This check is performed when the Enter key is pressed the first time. It has one of the following causes:

1. | If the customer is on configuration screen 2 and has configured
| to use concurrent host attachment, and the cursor is within an
| Hx:1 field:

- o | The Hx:1 and Hx:2 fields are joined together to form the
| fully qualified name of the AS/400 system. When configured
| for concurrent host attachment, the fully qualified name
| must be unique for each host.

2. | If the customer is on configuration screen 3 and the cursor is
| within a DLCI field:

- o | The DLCI in the field pointed to with the cursor is the same
| as another frame relay-token-ring bridge DLCI or as a Host
| DLCI on screen 2. All DLCIs must be unique.

3. | If the customer is on configuration screen 3 and the cursor is
| in the frame relay ring number field:

- o | Each ring number within a network must be unique.
| Therefore, the frame relay ring number cannot be the same as
| the LAN ring number.

4. | If the customer is on configuration screen 3 and the cursor is
| in the frame relay MAC address field:

- o | The frame relay MAC address must be different than the 5494
| token-ring LAN address on screen 1.

| **CE Action:** Check the configuration.

- | For problem number 1: Make sure that the fully qualified name
| for the AS/400 system is unique for each configured host. If
| you want to configure the 5494 to communicate with the same

| AS/400 system using different host names, for example H1 and H2,
| you must create an alias for the AS/400 system:

- | Use WRKCFGL *APPNLCL at the AS/400 system to create the
| alias.
 - | Use the AS/400 LU name for one Hx configuration, and use the
| alias as the AS/400 LU name for the other Hx configuration.
-
- | For problem number 2: You cannot use the same DLCI for both
| your 5494 SNA traffic and your 5494 bridge traffic even if it is
| flowing between the same two points. Assign a second DLCI. If
| two FR-TR bridge DLCIs are the same, remove one of them.
 - | For problem number 3: Each ring number within a network must be
| unique. Therefore, the frame relay ring number cannot be the
| same as the LAN ring number. Change one of the ring numbers.
 - | For problem number 4: The frame relay MAC address is the LAN
| address of the 5494 on the frame relay side of the bridge. It
| must be different from the 5494 Token-ring address.

| Correct the configuration.

008D

Cause: Printer port and station values are not valid. Valid ports are 0-3. Valid ports for the Twinaxial Expansion Kit are 4-7. Valid stations are 0-7.

CE Action: Check the configuration. (See "[Verifying the 5494 Configuration](#)" in topic [4.4](#).) Make sure that the printer port and station address are either both numbers or both underscores. If a printer was selected, both subfields should be numbers. If not, both should be underscores.

008E

Cause: One or more fields contain an insufficient number of characters. The cursor is placed after the last character of the first field that contains an insufficient number of characters.

CE Action: Press **Error Reset**. Refer to the configuration worksheets or the *IBM 5494 Remote Control Unit User's Guide* for the correct field information. If you entered the value incorrectly, correct the entry. If you entered the value as it appears on the worksheets, contact the system planner for the correct information.

008F

Cause: One or more fields contain a value that is outside the valid range. The cursor is placed under the first character of the field with a value that is out of range.

CE Action: Press **Error Reset**. Refer to the configuration worksheets or the *IBM 5494 Remote Control Unit User's Guide* for the correct field value. If you entered the value incorrectly, correct the entry. If you entered the value as it appears on the worksheets, contact the system planner for the correct information.

0091

Cause: Reverse and Close keys are not supported in a Word Wrap entry field.

CE Action: Press **Error Reset**. Do not use the Reverse or Close key in this field.

0092

Cause: The Reverse key is not supported on a display that is configured for shared addressing.

CE Action: Press **Error Reset**. Do not use the Reverse key.

0097

Cause: A test request function is not supported by the AS/400 system.

CE Action: Ask the customer to contact the AS/400 system operator and determine why the function is not supported.

0098

Cause: Undefined hardware error.

The 5494 entered an error handling routine but did not detect an error.

CE Action: If the SRC reoccurs, run extended diagnostics and test all hardware.

Note: Before running extended diagnostics, make sure that all sessions with the 5494 have been disconnected.

0099

Cause: A key requiring AS/400 system action was pressed, but one of the following has occurred:

- The requested function is not supported.
- The workstation is not in session with the AS/400 system.

CE Action: Select the action that is appropriate for the current status of the workstations or printers:

- If this error occurs while you are establishing communication with the AS/400 system, press **Error Reset** and try the operation again.
- If this error occurs while trying to configure the 5494 using this display, the 5494 was not put in configuration mode or configuration is in progress at another workstation or at the 5494 LCD display. Follow the steps in the *IBM 5494 Remote Control Unit User's Guide* for configuring the 5494 for an NWS to place the 5494 in configuration mode.

- If there is at least one workstation with a logon screen displayed, ask the customer to contact the AS/400 system operator and determine if all workstations and printers attached to the 5494 are online.

If all attached workstations and printers are online, ask the customer to report to the AS/400 system operator that a mismatch exists between the actual 5494 cluster configuration and the system configuration record.

- If there is only one workstation attached to the 5494, ask the customer to contact the AS/400 system operator and have the workstation brought online.

009A

Cause: A password that is not valid has been entered three times in an attempt to access concurrent diagnostics from a PWS.

CE Action: Determine the correct password and retry the operation or place the 5494 in TEST mode by pressing **Req. 290, Enter** at the operator panel.

The following 3-digit SRCs are displayed in the 5494 error log as E00xxx. Four-digit SRCs begin in topic [3.2](#) with SRC 0100.

100

Cause: Hardware failure.

CE Action: Replace the planar. See "[Planar Removal and Replacement](#)" in topic [5.7.10](#).

101(s)

Cause: Hardware failure.

CE Action: Replace the SIMM in slot s. If an asterisk (*) is displayed, replace both SIMMs. See "[SIMM Removal and Replacement](#)" in topic [5.7.8](#).

102

Cause: Hardware failure.

CE Action: Replace the operator panel. Be sure to order the correct keypad overlay for the replacement panel. See "[Operator Panel Removal and Replacement](#)" in topic [5.7.7](#).

105

Cause: Hardware failure.

CE Action: Replace the power supply. See "[Power Supply Removal and Replacement](#)" in topic [5.7.9](#).

106

Cause: Hardware failure.

CE Action: Replace the diskette drive. See "[Diskette Drive Removal and Replacement](#)" in topic [5.7.6](#).

108(s)

Cause: Hardware failure.

CE Action: Replace the host-twinaxial adapter in slot s. See "[Twinaxial Adapter and Twinaxial Expansion Adapter Removal and Replacement](#)" in topic [5.7.2](#).

109(s)

Cause: Hardware failure.

CE Action: Replace the Token-Ring adapter in slot s. See "[Token-Ring Adapter Removal and Replacement](#)" in topic [5.7.3](#).

111(s,c)

Cause: Hardware failure.

CE Action: Replace the 5494 host communication cable attached to the adapter in slot s (c indicates the cable type).

If c=

- 1** X.21
- 2** V.35
- 3** EIA 232D

113

Cause: Hardware failure.

CE Action: Remove the system diskette. Insert the backup copy of the 5494 System Diskette and press **Enter** to try again. If the backup diskette loads successfully, order a new system diskette to replace the damaged one.

To order a replacement diskette in the U.S., call 1-800-334-1089. To order a replacement diskette outside the U.S., contact your local IBM branch office. Have the 5494 serial number available.

114(s)

Cause: Hardware failure.

CE Action: Replace the adapter installed in slot s. If the adapter is a Token-Ring adapter, see "["Token-Ring Adapter Removal and Replacement" in topic 5.7.3](#)". If the adapter is a host-twinaxial adapter, see "["Twinaxial Adapter and Twinaxial Expansion Adapter Removal and Replacement" in topic 5.7.2](#)".

115

Cause: Hardware failure.

CE Action: This is the result of a timing problem between the planar and an adapter installed in the 5494. Replace and verify the adapters one at a time. If this does not solve the problem, replace the planar. Be sure to reinstall the adapters that have been verified as operating correctly.

116

Cause: Hardware failure.

CE Action: This is probably due to a hardware problem but could also be due to a code problem. Replace and verify the adapters one at a time. If this does not solve the problem, replace the planar. See "["Planar Removal and Replacement" in topic 5.7.10](#)". Be sure to reinstall the adapters that have been verified as operating correctly.

If the problem continues to occur, contact 5494 Support.

117

Cause: Hardware failure.

CE Action: This is a result of a timing problem between the planar and an adapter installed in the 5494. Replace and verify the adapters one at a time. If this does not solve the problem, replace the planar. See "["Planar Removal and Replacement" in topic 5.7.10](#)". Be sure to reinstall the adapters that have been verified as operating correctly.

119

Cause: Hardware failure.

CE Action: If external power variations are **not** suspected, replace the power supply.

120

| **Cause:** Hardware initialization required.

CE Action: The information stored in the 5494 about the installed adapters and features does not match that determined by the POST. This condition can result when adapters or features have just been installed, removed, or changed, or if there has been a failure in
| the 5494. Press the **Enter** key on the 5494 keypad and follow the
| message codes to run setup.

122

Cause: Hardware failure.

CE Action: Move the write-protect tab on the system diskette to the write position (the tab is covering the opening in the slot). If the tab is already in the write position, replace the diskette drive.

123

Cause: Hardware failure.

CE Action: Set the date and time using extended diagnostics. See "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2 to begin extended diagnostics, and then, following the message codes, set the date and time.

124

Cause: Hardware failure.

CE Action: The system diskette is damaged or a code problem is occurring. If this error occurs with the backup system diskette installed, replace the diskette drive. See "[Diskette Drive Removal and Replacement](#)" in topic 5.7.6. If the problem still occurs, contact 5494 Support.

125

Cause: Hardware failure.

CE Action: There is a problem reading the system diskette, or a code problem is occurring. If this error occurs with the backup system diskette, replace the diskette drive. See "[Diskette Drive Removal and Replacement](#)" in topic 5.7.6. If the problem continues to occur, contact 5494 Support.

130(s)

Cause: Hardware failure.

CE Action: Replace the planar. See "[Planar Removal and Replacement](#)" in topic 5.7.10. If this does not solve the problem, reinstall the planar and replace the SIMM in slot s. See "[SIMM Removal and Replacement](#)" in topic 5.7.8.

131(s)

Cause: Hardware failure.

CE Action: Replace the SIMM in slot s on the planar, where s=1 or 2. See "[SIMM Removal and Replacement](#)" in topic [5.7.8](#). If this does not solve the problem, replace the planar. See "[Planar Removal and Replacement](#)" in topic [5.7.10](#).

132

Cause: Hardware failure.

CE Action: Replace the planar. See "[Planar Removal and Replacement](#)" in topic [5.7.10](#). If this does not solve the problem, reinstall the planar and replace the operator panel. See "[Operator Panel Removal and Replacement](#)" in topic [5.7.7](#).

133

Cause: Hardware failure.

CE Action: Turn the 5494 power **OFF (0)** and then back **ON (1)**. Listen for the number of beeps as the 5494 performs the POST. If, after 1 minute, no beeps occur, replace the planar. See "[Planar Removal and Replacement](#)" in topic [5.7.10](#). Otherwise, replace the operator panel, first. See "[Operator Panel Removal and Replacement](#)" in topic [5.7.7](#). If this does not solve the problem, then, replace the planar.

138

Cause: Hardware failure.

CE Action: Replace the planar. See "[Planar Removal and Replacement](#)" in topic [5.7.10](#). If this does not solve the problem, reinstall the planar and replace the power supply. See "[Power Supply Removal and Replacement](#)" in topic [5.7.9](#).

139

Cause: Hardware failure.

CE Action: Replace the power supply. See "[Power Supply Removal and Replacement](#)" in topic [5.7.9](#). If this does not solve the problem, reinstall the power supply and replace the planar. See "[Planar Removal and Replacement](#)" in topic [5.7.10](#).

140

Cause: Hardware failure.

CE Action: Replace the planar. See "[Planar Removal and Replacement](#)" in topic [5.7.10](#). If this does not solve the problem, reinstall the planar and replace the diskette drive. See "[Diskette Drive Removal and Replacement](#)" in topic [5.7.6](#).

141

Cause: Hardware failure.

CE Action: Replace the diskette drive. See "[Diskette Drive Removal and Replacement](#)" in topic [5.7.6](#). If this does not solve the problem, reinstall the diskette drive and replace the planar. See "[Planar Removal and Replacement](#)" in topic [5.7.10](#).

143

Cause: Hardware failure.

CE Action: Replace the system diskette. If this does not solve the problem, replace the diskette drive. See "[Diskette Drive Removal and Replacement](#)" in topic [5.7.6](#). If this does not solve the problem, reinstall the diskette drive and replace the planar.

146

Cause: Hardware failure.

CE Action: Replace the planar. See "[Planar Removal and Replacement](#)" in topic [5.7.10](#). If this does not solve the problem, reinstall the planar and replace the Token-Ring adapter. See "[Token-Ring Adapter Removal and Replacement](#)" in topic [5.7.3](#).

147(s)

Cause: Hardware failure.

CE Action: Replace the Token-Ring adapter in slot s. If this does not solve the problem, reinstall the Token-Ring adapter and replace the planar. See "[Planar Removal and Replacement](#)" in topic [5.7.10](#).

148(s)

Cause: Hardware failure.

CE Action: Replace the planar. See "[Planar Removal and Replacement](#)" in topic [5.7.10](#). If this does not solve the problem, reinstall the planar and replace the host-twinaxial adapter in slot s. See "[Twinaxial Adapter and Twinaxial Expansion Adapter Removal and Replacement](#)" in topic [5.7.2](#).

149(s)

Cause: Hardware failure.

CE Action: Replace the host-twinaxial adapter in slot s. See "[Twinaxial Adapter and Twinaxial Expansion Adapter Removal and Replacement](#)" in topic [5.7.2](#). If this does not solve the problem, reinstall the host-twinaxial adapter and replace the planar. See "[Planar Removal and Replacement](#)" in topic [5.7.10](#).

150(s)

Cause: Hardware failure.

CE Action: Replace the host-twinaxial adapter in slot s. See "[Twinaxial Adapter and Twinaxial Expansion Adapter Removal and Replacement](#)" in topic [5.7.2](#). If this does not solve the problem, reinstall the host-twinaxial adapter and replace the twinaxial workstation attachment cable.

151(s)

Cause: Hardware failure.

CE Action: Replace the twinaxial workstation attachment cable connected to the adapter in slot s. If this does not solve the problem, reinstall the twinaxial workstation attachment cable and replace the host-twinaxial adapter in slot s. See "[Twinaxial Adapter and Twinaxial Expansion Adapter Removal and Replacement](#)" in topic [5.7.2](#).

152(s,p)

Cause: Cable failure.

CE Action: Isolate the problem as follows:

1. Turn the 5494 power **OFF (0)**. Remove the cable connected to port p (see [Table 8](#)). Then, turn the 5494 power back **ON (1)**. If this error code does not reappear, repair or replace the cable.
2. If the problem continues, replace the host-twinaxial adapter in slot s. See "[Twinaxial Adapter and Twinaxial Expansion Adapter Removal and Replacement](#)" in topic [5.7.2](#).

| **Note:** The customer may choose to operate the 5494 with these
| cabling problems until these cabling problems are repaired. To
| do so, press the **Enter** key on the 5494 keypad. Message 002-05 |
| 0 appears. Type **1** to select IPL in normal mode and
| press **Enter**. The 5494 attempts to use all the twinaxial ports
| and will log any resulting errors.

Table 8. Port Table	
P =	Port to which failing cable is connected:
1	Port 0 or Port 4
2	Port 1 or Port 5
3	Ports 0 and 1 or Ports 4 and 5
4	Port 2 or Port 6
5	Ports 0 and 2 or Ports 4 and 6
6	Ports 1 and 2 or Ports 5 and 6
7	Ports 0, 1, and 2 or Ports 4, 5, and 6
8	Port 3 or Port 7
9	Ports 0 and 3 or Ports 4 and 7
A	Ports 1 and 3 or Ports 5 and 7
B	Ports 0, 1, and 3 or Ports 4, 5, and 7
C	Ports 2 and 3 or Ports 6 and 7
D	Ports 0, 2, and 3 or Ports 4, 6, and 7
E	Ports 1, 2, and 3 or Ports 5, 6, and 7
F	Ports 0, 1, 2, and 3 or Ports 4, 5, 6, and 7

153(s,p)

Cause: Hardware failure.

CE Action: Replace the twinaxial workstation attachment cable connected to the adapter in slot s. If this does not solve the problem, reinstall the twinaxial workstation attachment cable and replace the twinaxial cable to port p. (See [Table 8](#).)

154(s,p)

Cause: Hardware failure.

CE Action: Replace the twinaxial cable connected to port p. (See [Table 8](#).) If this does not solve the problem, reinstall the twinaxial cable and replace the twinaxial workstation attachment cable connected to the adapter in slot s.

155(s,p)

Cause: Hardware failure.

CE Action: Replace the twinaxial workstation attachment cable attached to the adapter in slot s. If this does not solve the problem, reinstall the twinaxial workstation attachment cable, and then replace the twinaxial cable connected to port p. (See [Table 8](#).) If the problem continues to occur, reinstall the twinaxial cable and replace the host-twinaxial adapter in slot s.

156(s,c)

Cause: Hardware failure.

CE Action: Replace the host-twinaxial adapter in slot s. If this does not solve the problem, reinstall the host-twinaxial adapter and replace the communication cable (c indicates the cable type).

If c=

- 1** X.21
- 2** V.35
- 3** EIA 232D

157(s,c)

Cause: Hardware failure.

CE Action: Replace the communication cable (c indicates cable type).

If c=

- 1** X.21
- 2** V.35
- 3** EIA 232D

If this does not solve the problem, reinstall the communication cable and replace the host-twinaxial adapter in slot s.

158(s)

Cause: Hardware failure.

CE Action: Replace the Token-Ring adapter in slot s. If this does not solve the problem, reinstall the Token-Ring adapter and replace the Token-Ring cable.

159(s)

Cause: Hardware failure.

CE Action: Replace the Token-Ring cable attached to the adapter in slot s. If this does not solve the problem, reinstall the Token-Ring cable and replace the Token-Ring adapter.

160

Cause: Hardware failure.

CE Action: Replace the planar. If this does not solve the problem, replace the power supply, and then, if necessary, the diskette drive. Be sure to reinstall the FRUs that are operating correctly.

161

Cause: Hardware failure.

CE Action: Replace the power supply. If this does not solve the problem, reinstall the power supply and replace the diskette drive, and then, if necessary, the planar. Be sure to reinstall the FRUs that are operating correctly.

162

Cause: Hardware failure.

CE Action: Replace the diskette drive. If this does not solve the problem, reinstall the diskette drive and replace the power supply, and then, if necessary, the planar. Be sure to reinstall the FRUs that are operating correctly.

166(s,c)

Cause: Hardware failure.

CE Action: Replace the host-twinaxial adapter in slot s. If this does not solve the problem, replace the communication cable (c indicates the cable type).

If c=

- 1** X.21
- 2** V.35
- 3** EIA 232D

If the problem persists, replace the power supply (see "[Power Supply Removal and Replacement](#)" in topic 5.7.9), and then, if necessary, the planar (see "[Planar Removal and Replacement](#)" in topic 5.7.10). Be sure to reinstall the communication cable.

167(s,c)

Cause: Hardware failure.

CE Action: Replace the power supply. If this does not solve the problem, reinstall the power supply and replace the communication cable (c indicates the cable type).

If c=

- 1** X.21
- 2** V.35
- 3** EIA 232D

If the problem persists, reinstall the communication cable and replace the host-twinaxial adapter in slot s.

168(s)

Cause: Hardware failure.

CE Action: Replace the adapter installed in slot s. If this does not solve the problem, reinstall the adapter installed in slot s and replace the planar.

169

Cause: Hardware failure.

CE Action: Beginning with the adapter in slot 1, replace each adapter. If this does not solve the problem, replace the planar. Be sure to reinstall the FRUs that are operating correctly.

170(s)

Cause: Hardware Failure

CE Action: Replace the Ethernet adapter in slot s. If this does not solve the problem, replace the planar and reinstall the Ethernet adapter.

171(s)

Cause: Hardware Failure

CE Action: Replace the Ethernet adapter in slot s. If this does not solve the problem, replace the planar and reinstall the Ethernet adapter.

172(s)

Cause: Hardware Failure

CE Action: Verify that the Ethernet adapter in slot s is connected to a properly terminated Ethernet network. If so, replace the Ethernet adapter in slot s. If this does not solve the problem, replace the planar and reinstall the Ethernet adapter.

174(s)

Cause: A new adapter card that is not supported by the microcode was found in controller slot s.

CE Action: Press **Enter** to proceed with the initialization of the controller. The microcode disables the unsupported adapter.

The following 4-digit SRCs 0100-0191 appear in the error log buffer and in the time-stamped error log with 2 leading zeros (00) for permanent twinaxial errors. Three-digit hardware SRCs begin in topic [3.2](#) with SRC 100.

0100

Cause: A problem with an attached workstation has been detected. This SRC is reported if the workstation does not respond to a POLL within 200 μ sec. This SRC is not logged.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0101

Cause: A problem with an attached workstation has been detected. This SRC occurs when the 5494 detects one or more bit errors in data transmitted (transmit activity check) to an attached workstation.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0103

Cause: A problem with an attached workstation has been detected. The 5494 reports this SRC if the wrong parity was received in response to a POLL or ACTIVATE RECEIVE command.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0104

Cause: A problem with an attached workstation has been detected. Line parity check. This SRC occurs when a workstation detects a parity error in data transmitted by the 5494.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0105

Cause: A problem with an attached workstation has been detected. The addressed workstation cannot respond because another workstation on the same twinaxial line is in a continuous transmission mode.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0106

Cause: A problem with an attached workstation has been detected. Receive length check. The 5494 received the wrong number of bytes as a result of a POLL or ACTIVATE RECEIVE command.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0107

Cause: A problem with an attached workstation has been detected. A station address, that is not correct, was returned in response to a POLL or other command from the 5494.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0108

Cause: A problem with an attached workstation has been detected. The power-on transition status bits are set when the workstation is powered **ON**. This SRC is reported only if the bits are set while the workstation is in session.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0109

Cause: A problem with an attached workstation has been detected. The 5494 checked the device status and found that the busy bit was not on after an ACTIVATE WRITE command.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0111

Cause: A problem with an attached workstation has been detected. The 8-bit code sent in the keyboard response frame could not be translated to a character or a function by the 5494.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0120

Cause: A problem with an attached workstation has been detected. This condition indicates that a POLL or other command sent to the workstation was not a valid command or that the device ID was not correct.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0121

Cause: A problem with an attached workstation has been detected. This condition indicates that the address counter value was not inside the user accessible limits.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0122

Cause: A problem with an attached workstation has been detected. Storage or input queue overrun. This condition occurs if more than 16 commands and associated data frames are sent to the workstation by the 5494, or if an attempt is made to store data in storage that is not accessible to the user.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0123

Cause: A problem with an attached workstation has been detected. This condition indicates that no attribute was found or that the address counter pointed to an attribute.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0124

Cause: A problem with an attached workstation has been detected. This condition indicates that the ACTIVATE command sent to the workstation was not valid.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0125

Cause: A problem with an attached workstation has been detected. This condition indicates that the workstation returned an undefined exception status in response to a POLL.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0126

Cause: A problem with an attached workstation has been detected. A pass-through command that is not correct or unexpected was detected.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0149

Cause: A problem with an attached workstation has been detected. This condition indicates that the 5494 received a POLL response that is not valid.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0170

Cause: A problem with an attached workstation has been detected. The workstation failed to detect the end of a printer definition table (PDT). Sense data is 00.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0172

Cause: A problem with an attached workstation has been detected. The workstation detected data not valid in the printer definition table (PDT) sent to it from the AS/400 system. The sense data is 00ccxxxxyyyyyy, where cc is the command code of the definition containing data not valid, xx is the offset from the command to data not valid in bytes, and yyyy is additional error data.

CE Action: Refer to "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0173

Cause: A problem with an attached workstation has been detected. The workstation received a printer definition table (PDT) that was larger than its maximum size. Sense data is 00xxxxyyyy, where xxxx is the workstation's maximum PDT size, and yyyy was the size of the PDT sent to the display by the AS/400 system.

CE Action: Refer to "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0176

Cause: A problem with an attached workstation has been detected. The workstation received a microcode correction file from the AS/400 system that was in error. The sense data defines the error as follows:

001

The workstation failed to detect the end of the file.

0002yyyyyyyy
The workstation detected data not valid in the file.

yyyyyyyy
Additional error data

0003xxxxyyy
The size of the file is too large for the workstation.

xxxx
Workstation's maximum file size

yyyy
Size of the file sent to the workstation

CE Action: Refer to "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0177

Cause: A problem with an attached workstation has been detected. The workstation received a font file from the AS/400 system that was in error. Sense data defines the error as follows:

001
The workstation failed to detect the end of the file.

0002yyyyyyyy
The workstation detected data not valid in the file.

yyyyyyyy
Additional error data

0003xxxxyyy
The size of the file is too large for the workstation.

xxxx
Workstation's maximum file size

yyyy
Size of the file sent to the workstation

CE Action: Refer to "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0181

Cause: A problem with an attached workstation has been detected. This SRC indicates an MSR-detected error, a longitudinal redundancy check (LRC) error, or a 5494-detected parity error.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0182

Cause: A problem with an attached workstation has been detected. This SRC indicates that the workstation responded to a READ DEVICE ID command without setting a valid device-type code.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0183

Cause: A problem with an attached workstation has been detected. The display screen image size does not match the image size in the ID word sent by the workstation.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0184

Cause: A problem with an attached workstation has been detected. The keyboard ID received by the 5494 was not valid.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0189

Cause: A problem with an attached workstation has been detected. An outstanding status bit was set in the POLL response, and no outstanding status information was available.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0190

Cause: A problem with an attached workstation has been detected. This condition indicates that the workstation status did not change within 7 seconds after a not-busy response was returned to a positive acknowledge poll.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0191

Cause: A problem with an attached workstation has been detected. This condition indicates that the 5494 found that the busy bit has been on for a period of more than 1.6 minutes.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

The following 4-digit SRCs 0200-028X appear in the error log buffer and time-stamped error log with 2 leading zeros (00) for permanent twinaxial errors. Three-digit hardware SRCs begin in topic [3.2](#) with SRC 100.

0200

Cause: A problem with an attached printer has been detected. No response timeout. The 5494 posts this error when an attached printer fails to respond to a poll within 200 μ sec.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0201

Cause: A problem with an attached printer has been detected. The 5494 has detected one or more bit errors in a transmission (transmit activity check) an attached printer.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0203

Cause: A problem with an attached printer has been detected. The 5494 has detected a parity error in response to a POLL or ACTIVATE RECEIVE command.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0204

Cause: A problem with an attached printer has been detected. Line parity check. This error occurs when a printer detects a parity error in data transmitted by the 5494.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0205

Cause: A problem with an attached printer has been detected. The addressed printer cannot respond because another workstation on the same twinaxial line is in a continuous transmission mode.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0206

Cause: A problem with an attached printer has been detected. The 5494 has received the wrong number of bytes as a result of a POLL or ACTIVATE RECEIVE command.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0207

Cause: A problem with an attached printer has been detected. The 5494 received a response to a POLL or other command with an incorrect station address.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0208

Cause: A problem with an attached printer has been detected. The power-on transition status bits are set when printer power is turned **ON**. This SRC is reported only if the bits are set while the printer is in session.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0209

Cause: A problem with an attached printer has been detected. The 5494 checked the device status and found that the busy bit was not on after an ACTIVATE WRITE command.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

021x

Cause: A problem with an attached printer has been detected. Printer processing errors. The printer failed to process the incoming data stream correctly. (These errors are device-dependent.)

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0220

Cause: A problem with an attached printer has been detected. An attached printer received a command having a command code or device ID that is not valid.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0221

Cause: A problem with an attached printer has been detected. An attached printer returned an exception status of 110, which is not defined for this AS/400 system.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0222

Cause: A problem with an attached printer has been detected. Storage or input queue overrun. The printer received more than 16 frames of commands and associated data (more than 256 frames total) from the 5494.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0223

Cause: A problem with an attached printer has been detected. The addressed printer failed to respond to a valid ACTIVATE command and the associated data stream.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0224

Cause: A problem with an attached printer has been detected. The addressed printer indicates that the 5494 transmitted the wrong ACTIVATE command.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0225

Cause: A problem with an attached printer has been detected. An attached printer returned an exception status of 011, which is not defined for this AS/400 system.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0226

Cause: A problem or an unprintable character with an attached printer has been detected. The addressed printer detected a character code in the data stream that it does not support.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0228

Cause: A problem with an attached printer has been detected. The addressed printer detected an SNA character string (SCS) command, that is not valid, in the data stream sent by the AS/400 system.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0229

Cause: A problem with an attached printer has been detected. The addressed printer detected an SCS parameter that is not valid in the data stream sent by the AS/400 system.

Cause: A problem with an attached printer has been detected.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

023X-024X

Cause: A problem with an attached printer has been detected. The addressed printer detected an internal failure. These errors are device-dependent.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0249

Cause: A problem with an attached printer has been detected. The 5494 received a POLL or READ response, that is not valid, from the addressed printer.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

025X

Cause: A problem with an attached printer has been detected. Printers report the following normal periodic conditions to the 5494:

0250

End of form

0251

Unit not available or not ready

0258

End of ribbon (IBM 5219 Model D only).

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

0260

Cause: A problem with an attached printer has been detected. An Intelligent Printer Data Stream (IPDS) printer has multiple status. The AS/400 system must return a READ MULTIPLE STATUS command to initiate readout.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

026x

Cause: A problem with an attached printer has been detected. The addressed printer detected errors in the data stream from the AS/400 system. Specific error codes are device dependent.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

028x

Cause: A problem or hardware check with an attached printer has been detected. The addressed printer detected a hardware condition that halted printout. Specific error codes are device dependent.

CE Action: See "[MAP 0200: Twinaxial Workstation MAP](#)" in topic [2.1.2](#) to isolate the problem.

03xx

Cause: Unknown device error.

These error codes occur on a twinaxial device before it is known whether the device is a printer or a display.

CE Action: See the 01xx SRCs beginning in topic [3.2](#) for a description of xx.

100000

Cause: (X.25) A previous command is still in progress.

CE Action: Ask the customer to wait until the previous command is complete or an SRC other than 100000 is displayed.

100100

Cause: (X.25) A virtual circuit has already been established. The 5494 can communicate over only one virtual circuit at a time.

CE Action: Ask the customer to wait for the virtual circuit currently in use to be detached before trying the command again. If the customer wants to manually detach the circuit, refer the customer to the procedures for ending a communication link in the *IBM 5494 Remote Control Unit User's Guide*.

100200

Cause: (X.25) An ANSWER command was entered for a permanent virtual circuit (PVC).

CE Action: If the customer is trying to initiate communications on a PVC, ask the customer to use the **Open (O)** command.

If the customer is trying to initiate communications on a switched virtual circuit (SVC), the 5494 configuration is incorrect. (The virtual circuit type for this 5494 is defined as PVC only.) Ask the customer to verify the 5494 configuration, paying particular attention to the setting for Virtual Circuit Type. The possible selections are:

- PVC only
- SVC answer only
- Other (multiple PVC, multiple SVC, or SVC call).

Ask the customer to try to restart communication with the AS/400 system. If still unsuccessful, ask the customer to call the AS/400 system operator.

100300

Cause: (X.25) A CALL command was entered for a PVC.

CE Action: If the customer is trying to initiate communications on a PVC, use the **Open (O)** command.

If the customer is trying to initiate communications on an SVC, the 5494 configuration is incorrect. (The virtual circuit type for this 5494 is defined as PVC only.) Ask the customer to verify the 5494 configuration, paying particular attention to the setting for Virtual Circuit Type. The possible settings are:

- PVC only
- SVC answer only
- Other (multiple PVC, multiple SVC, or SVC call).

Ask the customer to try to restart communication with the AS/400 system. If still unsuccessful, ask the customer to call the AS/400 system operator.

100400

Cause: (X.25) The logical channel ID entered is not valid because it is not 3 characters long.

CE Action: Ask the customer to try again with the correct entry.

100500

Cause: (X.25) The logical channel ID entered is not valid because it is not a hexadecimal value between 001 and FFF.

CE Action: Ask the customer to try again with the correct entry.

100600

Cause: (X.25) The password entered is not valid because it is longer than 8 characters.

CE Action: Ask the customer to try again with the correct entry.

100A00

Cause: (X.25) You attempted to enter manual options or flow control negotiations from the keyboard, and the 5494 is not configured to allow the option.

The 5494 configuration may be incorrect.

CE Action: Ask the customer to verify the 5494 configuration, paying particular attention to the settings for Flow Control Negotiation and Manual Options allowed.

100B00

Cause: (X.25) The facility entered contains characters that are not hexadecimal (0 through 9 or A through F).

CE Action: Ask the customer to try again with the correct entry.

100C00

Cause: (X.25) The packet window size entered is not valid because it is less than 02.

CE Action: Ask the customer to try again with the correct entry.

100D00

Cause: (X.25) The packet window size entered is not valid because it is greater than 07 and modulo 8 is specified for this subscription.

CE Action:

- If the network subscription is for modulo 8, ask the customer to enter a value that is equal to or less than 07.
- If the subscription is for modulo 128 and the customer received this error, the 5494 has been configured for modulo 8 instead of modulo 128. Ask the customer to change the value of Packet Level Sequence Numbering from modulo 8 to modulo 128 in the 5494 configuration. (Refer to the AS/400 Connection Worksheet-X.25 to verify this value.)

Ask the customer to try again with the correct entry.

100E00

Cause: (X.25) The packet window size entered is not valid because it is greater than 15 and modulo 128 is specified.

CE Action: Ask the customer to try again with the correct entry.

100F00

Cause: (X.25) The packet size is not equal to 064, 128, 256, 512, or 1024.

CE Action: Ask the customer to try again with the correct entry.

101000

Cause: (X.25) The closed user group option does not contain 2 decimal digits.

CE Action: Ask the customer to try again with the correct entry.

101100

Cause: (X.25) A circuit command was entered that is not valid.

CE Action: The first entry following (Hx,) must be a C (CALL), A (ANSWER), O (OPEN), or D (DISCONNECT). Ask the customer to correct the entry and try again.

101300

Cause: (X.25) A C (CALL), A (ANSWER), O (OPEN), or D (DISCONNECT) was not entered as the first control character, or a C, A, O, or D was previously entered.

CE Action: The circuit command (C, A, O, D) must be the first entry following (Hx,) and must not be repeated. Ask the customer to correct the entry and try again.

101500

Cause: (X.25) The password option was entered for a PVC.

CE Action: If the customer is trying to initiate communications on a PVC, a password is not allowed. If the customer is trying to initiate communications on an SVC, the 5494 configuration is incorrect. Ask the customer to verify the 5494 configuration, paying particular attention to the setting for Virtual Circuit Type.

The possible selections are:

- PVC only
- SVC answer only
- Other (multiple PVC, multiple SVC, or SVC call).

Ask the customer to try to restart communication with the AS/400 system. If still unsuccessful, ask the customer to call the AS/400 system operator.

101600

Cause: (X.25) The password option is not valid because it is not all alphanumeric characters.

CE Action: Ask the customer to try again with the correct entry.

101800

Cause: (X.25) The closed user group option was entered either for an ANSWER command or an OPEN command. The closed user group option can be entered only for a CALL command issued on an SVC.

CE Action: Ask the customer to try again with the correct entry.

101900

Cause: (X.25) The Q (QLLC) or E (ELLC) option was selected with the ANSWER command. The Q or E option is valid only with a CALL command issued on an SVC, or an OPEN command issued on a PVC.

CE Action: Ask the customer to try again with the correct entry.

101A00

Cause: (X.25) An F (facility) or an R (reversed charging) option was entered for an ANSWER command or an OPEN command. The facility and reverse charging options can be entered only when initiating a CALL command on an SVC.

CE Action: Ask the customer to try again with the correct entry.

101B00

Cause: (X.25) The recovery value entered with the E (ELLC) option is not valid because it is not a decimal value in the range of 100-199.

CE Action: Ask the customer to try again with the correct entry.

101C00

Cause: (X.25) A CALL command was entered on an answer-only SVC. The 5494 configuration may be incorrect.

CE Action: If the customer is trying to place a call on an SVC, then the 5494 configuration is incorrect. Ask the customer to check the 5494 configuration, paying particular attention to the X.25 configuration selections for virtual circuit type.

The possible selections are:

- PVC only
- SVC answer only
- Other (multiple PVC, multiple SVC, or SVC call).

Ask the customer to try to restart communication with the AS/400. If still unsuccessful, ask the customer to call the AS/400 operator.

101D00

Cause: (X.25) An OPEN command was entered for an answer-only SVC. The 5494 configuration may be incorrect.

CE Action: If the customer is trying to initiate communication on a PVC, then the 5494 configuration is incorrect. Ask the customer to check the 5494 configuration and pay particular attention to the X.25 configuration selections for virtual circuit type.

The possible selections are:

- PVC only
- SVC answer only
- Other (multiple PVC, multiple SVC, or SVC call).

If the configuration is correct, ask the customer to try to restart communication with the AS/400 system.

If still unsuccessful, ask the customer to call the AS/400 system operator.

110014

Cause: (X.25) The 5494 issued a Clear Request packet after receiving a packet type that is not valid for state p1.

CE Action: Ask the customer to try the operation again:

1. Issue a Disconnect command. See the disconnect procedures in the *IBM 5494 Remote Control Unit User's Guide*.
2. Restart communication between the 5494 and the ALS.

Have the X.25 network personnel verify that the modem or DCE on the network side is operating correctly. Verify with network personnel that the 5494 is configured correctly for the network.

110015

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a packet type that is not valid for state p2.

CE Action: Ask the customer to try the operation again. A network problem is suspected. Ask the customer to contact the network personnel.

110017

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a packed type that is not valid for state p4.

CE Action: Ask the customer to try the operation again. A network problem is suspected. Ask the customer to contact the network personnel.

110018

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a packet type that is not valid for state p5.

CE Action: Ask the customer to try the operation again. A network problem is suspected. Ask the customer to contact the network personnel.

110031

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an error. A Call Connected was not received within 200 seconds.

CE Action: Ask the customer to try the operation again. A network problem is suspected. Ask the customer to contact the network personnel.

110032

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an error. A Clear Confirmation was not received within 200 seconds.

CE Action: Ask the customer to try the operation again. A network problem is suspected. Ask the customer to contact the network personnel.

110050

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a general ELLC/QLLC error.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

110051

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an undefined ELLC C-field.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

110054

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an undefined ELLC I-field.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

110055

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an I-field that was too long. The maximum I-field length accepted by the 5494 is 1033 bytes.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

110056

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an error. An ELLC frame reject was received.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

110057

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an ELLC header that is not valid.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

110059

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an ELLC timeout (LT1 x LN2) condition.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

11005A

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an ELLC receive sequence count (LNr) that is not valid.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

11005B

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an error. An ELLC recovery was rejected or terminated.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

1100A1

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an M-bit packet sequence that is not valid.

CE Action:

1. Make sure that the packet size entered (in the configuration or manually entered) matches the network subscription.
 2. Ask the customer to try the operation again.
 3. If the error reoccurs, ask the customer to report the problem to the ALS operator.
-

1100A6

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an error. A packet was too short.

CE Action:

1. Make sure that the packet size entered (in the configuration or manually entered) matches the network subscription.
 2. Ask the customer to try the operation again.
 3. If the error reoccurs, ask the customer to report the problem to the ALS operator.
-

1100A7

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a packet that was too long.

CE Action:

1. Make sure that the packet size entered (in the configuration or manually entered) matches the network subscription.
2. Ask the customer to try the operation again.

3. If the error reoccurs, ask the customer to report the problem to the ALS operator.

1100AA

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an unsupported interrupt packet.

CE Action: Ask the customer to report the problem to the network service representative.

1100AB

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a packet send sequence number (Ps) that is not valid.

CE Action: Ask the customer to report the error to the network service representative.

1100AC

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a packet receive sequence number (Pr) that is not valid.

CE Action: Ask the customer to report the error to the network service representative.

1100AD

Cause: (X.25) The 5494 issued a Clear Request packet after receiving a D-bit that is not valid.

CE Action: Ask the customer to report the error to the ALS operator.

1100D0

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a general resources error.

CE Action: Ask the customer to try the operation again. Other applications can operate normally. However, ask the customer to report the error to the ALS operator.

1100D2

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a path information unit (PIU) that was too long. The maximum PIU length accepted by the 5494 is either 521 or 1033 bytes depending on the XID exchange.

CE Action: Ask the customer to try the operation again. Other applications can operate normally. However, ask the customer to report the error to the ALS operator.

1100E0

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a facility length that is not valid.

CE Action: Ask the customer to report the problem to the network service representative.

1100E6

Cause: (X.25) The 5494 issued a Clear Request packet after detecting unsupported facility parameters.

CE Action: Ask the customer to report the problem to the network service representative.

1100E7

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an unsupported facility.

CE Action: Ask the customer to report the problem to the network service representative.

1100E8

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a call from an unexpected data terminal equipment (DTE).

CE Action: Make sure that the correct AS/400 system (H1-H4) is selected during AS/400 link establishment and that the network address is configured correctly for the selected AS/400 system. Ask the customer to try the operation again. If the problem continues, ask the customer to report the error to the ALS operator.

1100E9

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a D-bit request that is not valid.

CE Action: Ask the customer to report the problem to the ALS operator.

1100EA

Cause: (X.25) The 5494 issued a Clear Request packet after detecting an error. There was a Reset indication on an SVC.

CE Action: Ask the customer to try the operation again. If the error reoccurs, ask the customer to report the problem to the network service representative.

1100EB

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a protocol identifier that is not valid.

CE Action: Make sure that the diagnostic code setting (in the 5494 configuration) and the logical link control (LLC) protocol entered (in the configuration or manually entered) is correct. Ask the customer to try the operation again. If the error reoccurs, ask the customer to report the problem to the ALS operator.

1100EC

Cause: (X.25) The 5494 issued a Clear Request packet after detecting a password mismatch.

CE Action: Make sure that the password entered during AS/400 link establishment matches the one configured on the AS/400 system for this circuit. Ask the customer to try the operation again. If the error reoccurs, ask the customer to report the problem to the AS/400 system operator.

12001B

Cause: (X.25) The 5494 issued a Reset Request packet after detecting a packet type that is not valid for state d1.

CE Action: Ask the customer to try the operation again. Temporary operation may be allowed. However, ask the customer to report the error to the network service representative.

120033

Cause: (X.25) The 5494 issued a Reset Request packet after detecting an error. A reset confirmation was not received within 200 seconds.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

120050

Cause: (X.25) The 5494 issued a Reset Request packet after detecting a general ELLC/QLLC error.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

120051

Cause: (X.25) The 5494 issued a Reset Request packet after detecting an undefined ELLC C-field.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

120054

Cause: (X.25) The 5494 issued a Reset Request packet after detecting an undefined ELLC I-field.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

120055

Cause: (X.25) The 5494 issued a Reset Request packet after detecting an ELLC I-field that was too long.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

120056

Cause: (X.25) The 5494 issued a Reset Request packet after detecting an error. An ELLC frame reject was received.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

120057

Cause: (X.25) The 5494 issued a Reset Request packet after detecting an ELLC header that is not valid.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

120059

Cause: (X.25) The 5494 issued a Reset Request packet after detecting an ELLC timeout (LT1 x LN2) condition.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

12005A

Cause: (X.25) The 5494 issued a Reset Request packet after detecting an ELLC receive sequence count (LN_r) that is not valid.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

12005B

Cause: (X.25) The 5494 issued a Reset Request packet after detecting an error. An ELLC recovery was rejected or terminated.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

1200A1

Cause: (X.25) The 5494 issued a Reset Request packet after detecting an M-bit packet sequence that is not valid.

CE Action:

1. Make sure that the packet size entered (in the configuration or manually entered) matches the network subscription.
2. Ask the customer to try the operation again.
3. If the error reoccurs, ask the customer to report the problem to the ALS operator.

1200A6

Cause: (X.25) The 5494 issued a Reset Request packet after detecting a packet that was too short.

CE Action:

1. Make sure that the packet size entered (in the configuration or manually entered) matches the network subscription.
2. Ask the customer to try the operation again.
3. If the error reoccurs, ask the customer to report the problem to the ALS operator.

1200A7

Cause: (X.25) The 5494 issued a Reset Request packet after detecting a packet that was too long.

CE Action:

1. Make sure that the packet size entered (in the configuration or manually entered) matches the network subscription.
 2. Ask the customer to try the operation again.
 3. If the error reoccurs, ask the customer to report the problem to the ALS operator.
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1200AA

Cause: (X.25) The 5494 issued a Reset Request packet after detecting an unsupported interrupt packet.

CE Action: Ask the customer to report the error to the network service representative.

1200AB

Cause: (X.25) The 5494 issued a Reset Request packet after detecting a packet send sequence number (Ps) that is not valid.

CE Action: Ask the customer to report the error to the network service representative.

1200AC

Cause: (X.25) The 5494 issued a Reset Request packet after detecting a packet receive sequence number (Pr) that is not valid.

CE Action: Ask the customer to report the error to the network service representative.

1200AD

Cause: (X.25) The 5494 issued a Reset Request packet after receiving a D-bit that is not valid.

There is a problem at the target X.25 DTE.

CE Action: Ask the customer to report the problem to the ALS operator.

1200D0

Cause: (X.25) The 5494 issued a Reset Request packet after detecting a general resources error.

CE Action: Ask the customer to try the operation again. Other applications may operate normally. However, ask the customer to report the error to the ALS operator.

1200d2

Cause: (X.25) The 5494 issued a Reset Request packet after detecting a path information unit (PIU) that was too long. The maximum PIU length accepted by the 5494 is 1033 bytes.

CE Action: Ask the customer to try the operation again. Other applications may operate normally. However, ask the customer to report the error to the ALS operator.

1800dd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Call clearing originated at the target X.25 DTE.

CE Action: Ask the customer to report the error, including the diagnostic code (*dd*), to the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1801dd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. The target X.25 DTE is busy.

CE Action: Make sure that the call was placed to the correct AS/400 system and try the call again. If the number is busy for longer than normal, ask the customer to contact the ALS operator to see if the X.25 DTE port for the number called is actually busy. If it is not busy, make sure that the number configured in the 5494 for the called AS/400 system is correct. See ["Verifying the 5494 Configuration" in topic 4.4](#). If the error persists, ask the customer to contact the network service representative.

1803dd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Facility request not valid.

CE Action: Make sure that the facility request was entered correctly and ask the customer to try the operation again. If the error reoccurs, ask the customer to report the problem, including the diagnostic code (*dd*), to the network service representative. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1805dd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Network congestion.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report the problem, including the diagnostic code (*dd*), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1809dd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Out of order -- target X.25 DTE not ready.

CE Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, ask the customer to contact the ALS operator and make sure that:

1. The DCE is turned **ON** and operational
2. All 5494-related descriptions (line, controllers, and devices) are brought online.

If the problem persists, ask the customer to contact the network service representative.

180Bdd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Access to the target X.25 DTE not allowed.

CE Action: Make sure that the correct AS/400 system (H1-H4) was selected during link establishment and that the customer entered the correct network address for the target X.25 DTE during configuration. Then, ask the customer to try the operation again. If the problem persists, ask the customer to report the error, including the diagnostic code (*dd*), to the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

180Ddd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Unrecognized target X.25 DTE network address.

CE Action: Make sure that the correct AS/400 system (H1-H4) was selected during link establishment and that the customer entered the correct network address for the target X.25 DTE during configuration. Then, ask the customer to try the operation again. If the problem persists, ask the customer to report the error, including the diagnostic code (*dd*), to the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1811dd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Error at the target X.25 DTE.

CE Action: Ask the customer to report the error, including the diagnostic code (*dd*), to the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1813dd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Error at the 5494.

CE Action: Ask the customer to try the operation again. If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the person who planned the procedures. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1815dd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Recognized Private Operating Agency (RPOA) out of order.

CE Action: Make sure that the correct RPOA facility is selected or select a different RPOA. If the error reoccurs, ask the customer to report the problem, including the diagnostic code (dd), to the network service representative. See [Table 9](#) for an explanation of the diagnostic code (dd).

1819dd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Reverse charging not subscribed.

CE Action: If a reverse charging request was entered during link establishment, the subscription does not allow reverse charging. Ask the customer to try the operation again. If the error reoccurs, ask the customer to report the problem, including the diagnostic code (dd), to the network service representative. See [Table 9](#) for an explanation of the diagnostic code (dd).

1821dd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Incompatible destination.

CE Action: Make sure that the correct AS/400 system was selected during link establishment. Make sure that the correct network address for the target X.25 DTE was entered during configuration.

If the address is correct, ask the customer to report the problem, including the diagnostic code (dd), to the network service representative. See [Table 9](#) for an explanation of the diagnostic code (dd).

1829dd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Fast select not subscribed.

CE Action: Make sure that link establishment is correct. The fast select facility should not be selected.

1841dd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Gateway-detected procedure error.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report the problem, including the diagnostic code (dd), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (dd).

1843dd

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Gateway congestion error.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report the problem, including the diagnostic code (*dd*), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1880xx

Cause: (X.25 Public Network) The network issued a Clear Indication packet after detecting an error. Call clearing originated at the target X.25 DTE.

CE Action: Ask the customer to report the error, including the *xx* value which is the SNA extended diagnostic code, to the ALS operator.

1881dd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. Target X.25 DTE busy.

CE Action: Make sure that the call was placed to the correct AS/400 system and try the call again. If the number is busy for longer than normal, ask the customer to contact the called ALS operator to see if the X.25 DTE port for the number called is actually busy. If it is not busy, make sure that the number configured in the 5494 for the called system is correct. If the error persists, ask the customer to contact the network service representative.

1883dd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. Facility request not valid.

CE Action: Make sure that the facility request was entered correctly and ask the customer to try the operation again. If the error reoccurs, ask the customer to report the problem, including the diagnostic code (*dd*), to the network service representative. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1885dd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. Network congestion.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report the problem, including the diagnostic code (*dd*), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1889dd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. Out of order -- target X.25 DTE not ready.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, ask the customer to contact the ALS operator and make sure that:

1. The DCE is turned **ON** and operational.
2. All 5494-related descriptions (line, controllers, and devices) are brought online.

If the problem persists, ask the customer to contact the network service representative.

188Bdd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. Access to the target X.25 DTE not allowed.

CE Action: Make sure that the correct AS/400 system (H1-H4) was selected during link establishment and that the customer entered the correct network address for the target X.25 DTE during configuration. Then, ask the customer to try the operation again. If the problem persists, ask the customer to report the error, including the diagnostic code (*dd*), to the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

188Ddd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. Unrecognized network address.

CE Action: Make sure that the correct network address for the target X.25 DTE was entered during configuration. Then, ask the customer to try the operation again. If the problem continues, ask the customer to report the error, including the diagnostic code (*dd*), to the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1891dd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. Error at the target X.25 DTE.

CE Action: Ask the customer to report the error, including the diagnostic code (*dd*), to the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1893dd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. An error occurred at the 5494.

CE Action: Ask the customer to try the operation again. If the error reoccurs, ask the customer to report the problem, including the diagnostic code (*dd*), to the person who planned the procedures. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1895dd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. Recognized Private Operating Agency (RPOA) out of order.

CE Action: Make sure that the correct RPOA facility is selected or select a different RPOA. If the error reoccurs, ask the customer to report the problem, including the diagnostic code (*dd*), to the network service representative. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1899dd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. Reverse charging not subscribed.

CE Action: If a reverse charging request was entered during link establishment, the subscription does not allow reverse charging. Ask the customer to try the operation again. If the error reoccurs, ask the customer to report the problem, including the diagnostic code (*dd*), to the network service representative. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

18A1dd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. Incompatible destination.

CE Action: Make sure that the correct AS/400 system was selected during link establishment. Make sure that the correct network address for the target X.25 DTE was entered during configuration.

If the address is correct, ask the customer to report the problem, including the diagnostic code (*dd*), to the network service representative. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

18A9dd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. Fast select not subscribed.

CE Action: Make sure that link establishment is correct. The fast select facility should not be selected.

18C1dd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. Gateway-detected procedure error.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report the problem, including the diagnostic code (*dd*), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

18C3dd

Cause: (X.25 Private Network) The network issued a Clear Indication packet after detecting an error. Gateway congestion error.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report the problem, including the diagnostic code (*dd*), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1900dd

Cause: (X.25 Public Network) The network issued a Reset Indication packet after detecting an error. Reset originated at target X.25 DTE.

CE Action: Ask the customer to report the problem, including the diagnostic code (*dd*), to the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1901dd

Cause: (X.25 Public Network) The network issued a Reset Indication packet after detecting an error. Out of order -- disconnected target X.25 DTE.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1903dd

Cause: (X.25 Public Network) The network issued a Reset Indication packet after detecting an error. Error at the target X.25 DTE.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1905dd

Cause: (X.25 Public Network) The network issued a Reset Indication packet after detecting an error. Error at the 5494.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the AS/400 system planner. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1907dd

Cause: (X.25 Public Network) The network issued a Reset Indication packet after detecting an error. Network congestion.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1909dd

Cause: (X.25 Public Network) Remote DTE is operational. This is not an error. It is a normal condition at startup on some networks. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

CE Action: None.

190Fdd

Cause: (X.25 Public Network) Network is operational. This is not an error. It is a normal condition at startup on some networks. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

CE Action: None.

1911dd

Cause: (X.25 Public Network) The network issued a Reset Indication packet after detecting an error. Incompatible destination.

CE Action: Make sure that the correct logical channel identifier was entered during link establishment or configuration. If the logical channel identifier is correct, ask the customer to report the error, including the diagnostic code (*dd*), to the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

191Ddd

Cause: X.25 Public Network: The network issued a Reset Indication packet after detecting an error. Network out of order.

CE Action: Ask the customer to try the operation again. If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1980xx

Cause: (X.25 Public Network) The network issued a Reset Indication packet after detecting an error. Call clearing originated at the target X.25 DTE.

CE Action: Report the error, including the SNA extended diagnostic code (xx), to the ALS operator.

1981dd

Cause: (X.25 Private Network) The network issued a Reset Indication packet after detecting an error. Out of order due to a disconnected target X.25 DTE.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the network service representative and ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1983dd

Cause: (X.25 Private Network) The network issued a Reset Indication packet after detecting an error. Error at the target X.25 DTE.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1985dd

Cause: (X.25 Private Network) The network issued a Reset Indication packet after detecting an error. Error at the 5494.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the AS/400 system planner. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1987dd

Cause: (X.25 Private Network) The network issued a Reset Indication packet after detecting an error. Network congestion.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1989dd

Cause: (X.25 Private Network) Remote DTE is operational. This is not an error. It is a normal condition at startup on some networks.

CE Action: None. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

198Fdd

Cause: (X.25 Private Network) Network is operational. This is not an error. It is a normal condition at startup on some networks.

CE Action: None. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1991dd

Cause: (X.25 Private Network) The network issued a Reset Indication packet after detecting an error. Incompatible destination.

CE Action: Make sure that the correct logical channel identifier was entered during link establishment or configuration. If the logical channel identifier is correct, ask the customer to report the error, including the diagnostic code (*dd*), to the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

199Ddd

Cause: (X.25 Private Network) The network issued a Reset Indication packet after detecting an error. Network out of order.

CE Action: Ask the customer to try the operation again. If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1A00dd

Cause: (X.25) The network issued a Restart. No additional information.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1A01dd

Cause: (X.25) The network issued a Restart. Local procedure error.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1A03dd

Cause: (X.25) The network issued a Restart. Network congestion.

CE Action: Wait. Then, ask the customer to try the operation again.

Note: The network might impose restrictions on how fast the operation can be retried. To alleviate network congestion, ask the customer to consult the network service representative.

If the error reoccurs, ask the customer to report it, including the diagnostic code (*dd*), to the network service representative and the ALS operator. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1A07dd

Cause: (X.25) This is not an error. It is a normal condition at startup on some networks. Network is operational.

CE Action: None. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

1A7Fdd

Cause: (X.25) Registration or cancellation confirmed. This is not an error. It is a normal condition at startup on some networks.

CE Action: None. See [Table 9](#) for an explanation of the diagnostic code (*dd*).

Diagnostic Codes for 18xxdd, 19xxdd, and 1Axxdd Errors: The diagnostic codes (dd) listed here are defined by CCITT Recommendation X.25. IBM does not guarantee that they will apply to your network. You should consult a representative of your network to determine the diagnostic codes that apply to you.

Table 9. Diagnostic Codes for 18xxdd, 19xxdd and 1Axxdd Errors	
Diagnostic Code (dd)	Description
00	No additional information
01	Send sequence -- P (s) is not valid
02	Receive sequence -- P (r) is not valid
10	Packet type is not valid
11	State r1
12	State r2
13	State r3
14	State p1
15	State p2
16	State p3
17	State p4
18	State p5
19	State p6
1A	State p7
1B	State d1
1C	State d2
1D	State d3
20	Packet not allowed
21	Unidentifiable packet
22	Call on one-way logical channel
23	Packet type on a permanent virtual circuit is not valid
24	Packet on unassigned logical channel
25	Reject not subscribed to
26	Packet too short
27	Packet too long
28	General format identifier is not valid
29	Restart with LCID not equal X'000'
2A	Packet type not compatible with facility
2B	Unauthorized interrupt confirmation
2C	Unauthorized interrupt
2D	Unauthorized reject
30	Timer expired, general
31	Timer expired for incoming call
32	Timer expired for clear indication
33	Timer expired for reset indication
34	Timer expired for restart indication
35	Timer expired for call deflection
40	Call setup, or call clearing, or registration problem
41	Facility registration code not allowed
42	Facility parameter not allowed
43	Called DTE address is not valid
44	Calling DTE address is not valid
45	Facility/registration length is not valid
46	Incoming call barred
47	No logical channel available
48	Call collision
49	Duplicate facility requested
4A	Nonzero address length
4B	Nonzero facility length
4C	Facility not provided when expected
4D	CCITT-specified DTE facility is not valid
4E	Maximum number of call redirections or call deflections exceeded
50	QLLC or ELLC error (general)
51	Incorrect cause code from DTE
52	Not aligned octet
53	Inconsistent Q bit setting
54	Network user identifier (NUI) problem
60-6F	Not assigned

70	International problem
71	Remote network problem
72	International protocol problem
73	International link out of order
74	International link busy
75	Transit network facility problem
76	Remote network facility problem
77	International routing problem
78	Temporary routing problem
79	Unknown called DNIC
7A	Maintenance action (this diagnostic code can also apply to a maintenance action within a national network)
80-FF	<p>Network-specific diagnostic information</p> <p>See your network administrator for a description of the diagnostic codes in this range.</p>

1B1100

Cause: (X.25) An unsolicited Restart Confirmation packet was received. The 5494 issued a Restart Request packet after detecting the error.

CE Action: Ask the customer to notify the network service representative that an unsolicited Restart Confirmation packet was received.

1B3400

Cause: (X.25) A Restart Confirmation packet was not received within 200 seconds. The 5494 issued a Restart Request packet after detecting the error.

CE Action: Ask the customer to notify the network service representative that a Restart Confirmation packet was not received within 200 seconds.

1BA5YY

| **Cause:** (X.25) A Diagnostic packet was received. The yy field is
| the diagnostic cause code sent by the network. Contact the network
| service provider for a definition of the cause code.

CE Action: Ask the customer to report the problem to the network service representative.

1BA600

Cause: (X.25) The packet was too short. The 5494 issued a Restart Request packet after detecting the error.

CE Action: Ask the customer to notify the network service representative that a packet was received that was too short.

1BA700

Cause: (X.25) The packet was too long. The 5494 issued a Restart Request packet after detecting the error.

CE Action: Ask the customer to notify the network service representative that a packet was received that was too long.

1BA800

Cause: (X.25) The general format identifier (GFI), restart indication, or confirmation was not valid. The 5494 issued a Restart Request packet after detecting the error.

CE Action: Ask the customer to notify the network service representative that a packet was received with a GFI, restart indication, or confirmation that is not valid.

1BE200

Cause: (X.25) The logical channel identifier (LCID) is not equal to 0 on the Restart Indication/Confirmation packet. The 5494 issued a Restart Request packet after detecting the error.

CE Action: Ask the customer to notify the network service representative that the LCID is not equal to 0 on the Restart Indication/Confirmation packet.

1BE500

Cause: (X.25) The logical channel identifier (LCID) is equal to 0 on a non-Restart/Diagnostic packet. The 5494 issued a Restart Request packet after detecting the error. The 5494 does not support data on an LCID that is equal to 0.

CE Action: Ask the customer to check the network subscription.

200000

Cause: (X.21) CALL command already in progress.

CE Action: Wait until the CALL command is complete, or an SRC other than 200000 is displayed.

200100

Cause: (X.21) DISCONNECT command accepted. Call clearing is in progress.

CE Action: You can now make another call, if required.

200200

Cause: (X.21) You attempted a DISCONNECT command while a CALL command was in progress, or when no circuit connection existed.

CE Action: Wait until the previous command completes, then try again. If no command was in progress, you can now make a call.

210100

Cause: (X.21) The call was received by the called ALS. Communication should be established shortly. This is not an error (Call progress signal 01).

CE Action: Wait 1 minute or until a different SRC is displayed. This status is temporary.

210200

Cause: (X.21) The call is being redirected by the network to a number other than the one called. Call connection is in progress. This is not an error (Call progress signal 02).

CE Action: Wait 1 minute or until a different SRC is displayed. This status is temporary.

210300

Cause: (X.21) The call was queued by the network. Communication will be established when the AS/400 system called is not busy. This is not an error (Call progress signal 03).

CE Action: Wait 1 minute or until a different SRC is displayed. This status is temporary.

210400

Cause: (X.21) A private network was reached. Call connection is in progress. This is not an error (Call progress signal 04).

CE Action: Wait 1 minute or until a different SRC is displayed. This status is temporary.

210500

Cause: (X.21) A public network was reached. Call connection is in progress. This is not an error (Call progress signal 05).

CE Action: Wait 1 minute or until a different SRC is displayed. This status is temporary.

212000

Cause: (X.21) The network has reported that there is no connection (Call progress signal 20).

CE Action: Make sure that the call was placed to the correct AS/400 system and try the operation again. If the error reoccurs, make sure that the number configured in the 5494 configuration for the called AS/400 system is correct. If the error still occurs, ask the customer to report it to the network service representative.

212100

Cause: (X.21) The network has reported that the number called is busy (Call progress signal 21).

CE Action: Make sure that the call was placed to the correct AS/400 system and try the call again. If the number is busy for longer than normal, ask the customer to contact the ALS operator to see if the AS/400 system port for the number called is actually busy. If it is not busy, make sure that the number configured in the 5494 for the called AS/400 system is correct. If the error persists, ask the customer to contact the network service representative.

212200

Cause: (X.21) The network has reported that there is a procedure error in the selection signals sent to the network (for example, incorrect format). (Call progress signal 22.)

CE Action: Make sure that the operating procedures are correct and try the operation again. If the customer is performing Online Facility Registration, make sure the facility codes and parameters entered are consistent with the network standards. If the same failure occurs again, report to the customer that the failure was caused by the modem/DCE or the network.

212300

Cause: (X.21) The network detected a transmission error in the selection signals. This is a DCE or a network error (Call progress signal 23).

CE Action: Make sure that the number called is correct and try the call again after 1 minute. If the same problem reoccurs, report to the customer that the transmission error is probably due to a network problem.

214100

Cause: (X.21) Network access is barred. The 5494 is not allowed to connect to the called ALS (Call progress signal 41).

CE Action: Make sure that the call was placed to the correct AS/400 system and that the operating procedures and configuration are compatible with the network subscription for the 5494 and the ALS. If the procedures and configuration are correct and compatible, the failure is a network problem.

214200

Cause: (X.21) The network detected that the number called has changed (Call progress signal 42).

CE Action: Make sure that the call was placed to the correct AS/400 system and try the operation again. If the error reoccurs, make sure that the number configured for the called AS/400 system is correct and has not been changed. If the error still occurs, ask the customer to report it to the network service representative.

214300

Cause: (X.21) The network detected that the called number is not valid or not assigned to any DTE, or the user class of service is not compatible (Call progress signal 43).

CE Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, make sure that the number format, access code, and the number for the called AS/400 system configured in the 5494 are correct. If the error persists, ask the customer to report it to the network service representative.

214400

Cause: (X.21) The network detected that the number called is out of order (Call progress signal 44).

CE Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, ask the customer to contact the ALS operator and make sure that:

- The DCE is turned **ON** and operational.
- All 5494-related descriptions (line, controllers, and devices) are brought online.

If the problem persists, ask the customer to contact the network service representative.

214500

Cause: (X.21) The network detected that the called DTE is signaling controlled-not-ready (Call progress signal 45).

CE Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, ask the customer to contact the ALS operator and make sure that all 5494-related descriptions (line, controllers, and devices) are brought online. If the problem persists, ask the customer to contact the network service representative.

214600

Cause: (X.21) The network detected that the called DTE is signaling uncontrolled-not-ready (Call progress signal 46).

CE Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, ask the customer to contact the ALS operator and make sure that:

- The DCE is turned **ON** and operational.
- All 5494-related descriptions (line, controllers, and devices) are brought online.

If the problem persists, ask the customer to contact the network service representative.

214700

Cause: (X.21) The network detected that the called DCE is turned off (Call progress signal 47).

CE Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, ask the customer to contact the ALS operator and make sure that the DCE is turned on. If the error persists, ask the customer to contact the network service representative.

214800

Cause: (X.21) The network detected that the facility request code is not valid (Call progress signal 48).

CE Action: Make sure that the facility subscription request entered is correct. If the error reoccurs, ask the customer to contact the network service representative.

214900

Cause: (X.21) The network detected that there is a network problem in the local loop at the DCE you called. This could be a temporary condition on the network (Call progress signal 49).

CE Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, ask the customer to contact the network service representative.

215100

Cause: (X.21) The number called cannot be obtained (Call progress signal 51).

CE Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, make sure that the number format, access code, and the number for the called AS/400 system configured in the 5494 are correct. If the error persists, ask the customer to report the problem to the network service representative.

215200

Cause: (X.21) The network detected that user class of service is not compatible (Call progress signal 52).

CE Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, make sure that the number format, access code, and the number for the called AS/400 system configured in the 5494 are correct. If the error persists, ask the customer to report the problem to the network service representative.

216100

Cause: (X.21) The network is congested. This could be a temporary condition on the network (Call progress signal 61).

CE Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, ask the customer to contact the network service representative.

217100

Cause: (X.21) There is long-term network congestion (Call progress signal 71).

CE Action: Make sure that the call was placed to the correct AS/400 system. Some networks allow retry after a waiting period. This is a network problem. If the problem persists, ask the customer to contact the network service representative.

217200

Cause: (X.21) The network detected that the Recognized Private Operating Agency (RPOA) is out of order. The failure is caused by an RPOA problem or a network problem (Call progress signal 72).

CE Action: Make sure that the call was placed to the correct AS/400 system and try the operation again. If the error reoccurs, make sure that the number format, access code, and the number for the called AS/400 system configured in the 5494 are correct. If the problem persists, ask the customer to contact the RPOA or network service representative.

218100

Cause: (X.21) This is a confirmation of the facility registration or cancellation, not an error (Call progress signal 81).

CE Action: None.

218200

Cause: (X.21) Redirection of call facility is activated. This is a response to a status inquiry, not an error (Call progress signal 82).

CE Action: None.

218300

Cause: (X.21) Redirection of call facility is deactivated. This is a response to a status inquiry, not an error (Call progress signal 83).

CE Action: None.

219x00

Cause: (X.21) Codes reserved for situations unique to particular countries (Call progress signal 9x).

CE Action: Call the network supplier to determine the meaning of the call progress signal 9x.

220000

Cause: (X.21) An Exchange Station Identification (XID) that is not valid was received (Short Hold indicators are not valid).

CE Action: Make sure that the number called is correct. If the number called is correct, report to the customer that the problem is probably due to an ALS programming or configuration error.

220100

Cause: (X.21) An Exchange Station Identification (XID) that is not valid was received. More than 14 digits were received or the number of digits received does not equal the number of digits specified for Short Hold mode.

CE Action: There could be an ALS error or a configuration problem. Verify both configurations. Pay particular attention to the connection number.

220200

Cause: (X.21) An Exchange Station Identification (XID) was received from the wrong DTE during Short Hold Mode (SHM) reconnection.

CE Action:

- **For a new or changed installation or configuration:** There could be a configuration mismatch between the 5494 and the AS/400 system. Ask the customer to verify both configurations. Pay particular attention to the configuration for the connection numbers and retry parameters.
- **For an existing, unchanged installation or configuration:** The session was reset. Ask the customer to contact the ALS operator and report this problem.

220300

Cause: (X.21) An Exchange Station Identification (XID) was required and was not received first.

CE Action:

- **For a new or changed installation or configuration:** There could be a configuration mismatch between the 5494 and the AS/400 system. Verify both configurations.
- **For an existing, unchanged installation or configuration:** The session was reset. Ask the customer to contact the ALS operator and report this problem.

220400

Cause: (X.21) A DCE clear was received during call selection. The failure is caused by a network or DCE problem.

CE Action: Ask the customer to report the problem to the network service representative.

220500

Cause: (X.21) There was a transition to data transfer state, that is not valid, while receiving a message. The failure is caused by a network or DCE problem.

CE Action: Ask the customer to report the problem to the network service representative.

220600

Cause: (X.21) A message was too long for the buffer. The failure is caused by a network or DCE problem.

CE Action: Ask the customer to report the problem to the network service representative.

220700

Cause: (X.21) An attempt was made to send an X.21 message to the network in Synchronous Data Link Control (SDLC) state.

CE Action: Run extended diagnostics and test all 5494 hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in topic [4.2](#). If no problem is found with the 5494 hardware, ask the customer to contact the X.21 network service representative and report the problem.

220800

Cause: (X.21) An attempt was made to send a Synchronous Data Link Control (SDLC) frame to the network in X.21 state.

CE Action: Run extended diagnostics and test all 5494 hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in topic [4.2](#). If the problem still occurs, replace the planar. If no problem is found with the 5494 hardware, ask the customer to contact the X.21 network service representative and report the problem.

220900

Cause: (X.21) A message was received in the not-ready queue.

CE Action: Run extended diagnostics and test all 5494 hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in topic [4.2](#). If no problem is found with the 5494 hardware, ask the customer to contact 5494 Support.

221101

Cause: (X.21) A timeout (T1) for CALL REQUEST response occurred. The failure could be caused by a network or DCE problem. This error can occur if the ALS configuration does not match the 5494 configuration.

CE Action: Verify that the ALS and 5494 configurations match. If they match and you have just placed a call, try the call again. If this SRC reoccurs or an existing session is reset, ask the customer to report the problem to the network service representative.

221102

Cause: (X.21) A timeout (T2) for selection-signal response occurred. The failure is caused by a network or DCE problem.

CE Action: If you have just placed a call, try the call again. If this SRC reoccurs or an existing session is reset, ask the customer to report the problem to the network service representative.

221103

Cause: (X.21) A timeout (T3A or T3B) for call-progress-signal response occurred. The failure is caused by a network or DCE problem.

CE Action: If you have just placed a call, try the call again. If this SRC reoccurs or an existing session is reset, ask the customer to report the problem to the network service representative.

221104

Cause: (X.21) A timeout (T4B) for call-accepted response occurred. The failure is caused by a network or DCE problem.

CE Action: If you have just placed a call, try the call again. If this SRC reoccurs or an existing session is reset, ask the customer to report the problem to the network service representative.

221105

Cause: (X.21) A timeout (T5) for DTE-clear-request occurred. The failure is caused by a network or modem/DCE problem.

CE Action: If you have just placed a call, try the call again. If this SRC reoccurs or an existing session is reset, ask the customer to report the problem to the network service representative.

221106

Cause: (X.21) A timeout (T6) for DTE-clear-confirmation occurred. The failure is caused by a network or DCE problem.

CE Action: If you have just placed a call, try the call again. If this SRC reoccurs or an existing session is reset, ask the customer to report the problem to the network service representative.

221300

Cause: (X.21) A call-collision error occurred.

CE Action: Try the operation again. If the error occurs again, ask the customer to contact the network service representative and report the problem.

221400

Cause: (X.21) A DCE clear was received during X.21 data-transfer state. Connection to the ALS was lost.

CE Action: Make sure that the network address for the ALS entered during 5494 configuration is correct. If the number is correct, there is an ALS or network problem.

221500

Cause: (X.21) The received Exchange Station Identification (XID) indicated that the ALS was busy.

CE Action: Ask the customer to try the call again. The problem could be due to a depletion of AS/400 resources. If the problem persists, ask the customer to contact the AS/400 system operator and report the error.

23xx00

Cause: (X.21) A call progress signal (xx) was received from the network, but a call was not placed. The failure is caused by a network problem.

CE Action: Report to the customer that the failure is probably due to a network or modem/DCE problem.

240000

Cause: (X.21) The 5494 received a call progress signal that is not valid. The failure is caused by a network problem.

CE Action: Report to the customer that the failure is due to a network or modem/DCE problem.

250100

Cause: (X.21) The XID3 command received does not contain a network name control vector.

CE Action: There is an ALS configuration error. Ask the customer to report the problem to the ALS operator.

250200

Cause: (X.21) The XID3 command received does not contain a Short Hold Mode (SHM) control vector.

CE Action: There is an ALS configuration error. Ask the customer to report the problem to the ALS operator.

250300

Cause: (X.21) The XID3 command received does not contain a Short Hold Mode (SHM) connection ID.

CE Action: There is an ALS configuration error. Ask the customer to report the problem to the ALS operator.

300000

Cause: (V.25 bis) Call request not allowed. Link is not established or another call is in progress.

CE Action: Wait until an SRC other than 300000 is displayed or wait 30 seconds and try the call again.

300100

Cause: (V.25 bis) DISCONNECT command accepted. Call clearing in progress.

CE Action: If necessary, try to make another call.

300200

Cause: (V.25 bis) Call clearing not allowed.

CE Action: Do not attempt call clearing at this time.

3101ET

Cause: (V.25 bis) The number is busy. This can be a normal condition.

CE Action: Make sure that the call was placed to the correct AS/400 system and try the call again. If the number is busy for longer than normal, ask the customer to contact the called ALS operator to see if the AS/400 system port for the number called is actually busy. If it is not busy, make sure that the number configured in the 5494 for the called AS/400 system is correct. If the error persists, ask the customer to contact the network service representative.

Any other 3101xx

Cause: (V.25 bis) Call Failure Indication received. *xx* is one of the following parameters:

CB	Local DCE Busy
RT	Ring Tone (timeout)
AB	Abort Call (timeout)
NT	Answer Tone Not Detected
FC	Forbidden Call (for nationally dependent parameters).

Note: The 5494 can receive other parameters that indicate a problem in the modem or DCE.

CE Action: Make sure that the modem or DCE is connected to the network line. Also make sure that the call information entered in the configuration is correct. Try the call again. If the problem persists, ask the customer to report the problem to the modem, DCE, or network service representative.

3102xx

Cause: (V.25 bis) Delayed Call Indication received. *xx* is time in minutes.

Note: *xx*=99 could indicate a number greater than 99.

CE Action: Wait the number of minutes indicated by *xx*, and then try the call again. If the problem persists, ask the customer to report it to the network service representative.

310300

Cause: (V.25 bis) A Call Indication was received that is not valid. There was a procedure error in selection signals sent to the network.

CE Action: Make sure that the operating procedures are correct, and then ask the customer to retry the operation. If the failure reoccurs, report to the customer that the failure was caused by a modem/DCE or network problem.

320100

Cause: (V.25 bis) A message transmission error occurred.

CE Action: Run extended diagnostics and test all hardware. (Refer to "[Running Extended Diagnostics \(Offline\)](#)" in topic [4.2](#) for instructions.) If no error is determined by the diagnostics, replace the host-twinaxial adapter. If the problem still exists, replace the planar.

320600

Cause: (V.25 bis) A message was too long for the buffer.

CE Action: Run extended diagnostics and test all hardware. (Refer to "[Running Extended Diagnostics \(Offline\)](#)" in topic [4.2](#) for instructions.) If no error is determined by the diagnostics, report to the customer that there is a modem/DCE or network problem.

320900

Cause: (V.25 bis) A message was received in the not-ready queue.

CE Action: Run extended diagnostics and test all hardware. (Refer to "[Running Extended Diagnostics \(Offline\)](#)" in topic [4.2](#) for instructions.) If no error is determined by the diagnostics, contact 5494 Support and report this SRC.

321000

Cause: (V.25 bis) A Ready-For-Sending (RFS) timeout occurred during link establishment.

CE Action: Make sure the modem is turned **ON** (!) and operational. If it is, report to the customer that the failure is probably due to a network or modem/DCE problem.

321100

Cause: (V.25 bis) A call-connected timeout occurred for an outgoing call.

CE Action: Try the call again. If the problem persists, report to the customer that the failure is probably due to a network or modem/DCE problem.

321200

Cause: (V.25 bis) A call-connected timeout occurred for an incoming call.

CE Action: Attempt the call again. If the problem persists, report to the customer that the failure is probably due to a network or modem/DCE problem.

322000

Cause: (V.25 bis) A call-collision error occurred.

CE Action: Attempt the call again. If the problem persists, report to the customer that the failure is probably due to a network or modem/DCE problem.

322100

Cause: (V.25 bis) An incoming call was rejected because the call state is not valid.

CE Action: Report to the customer that the failure is probably due to a network or modem/DCE problem.

323100

Cause: (V.25 bis) A message containing fewer than 3 characters was received.

CE Action: Report to the customer that the failure is probably due to a network or modem/DCE problem.

323300

Cause: (V.25 bis) A call failure indication parameter was received that is corrupt or not valid.

CE Action: Report to the customer that the failure is probably due to a network or modem/DCE problem.

323400

Cause: (V.25 bis) A delayed call failure indication was received with no time indicated.

CE Action: Report to the customer that the failure is probably due to a network or modem/DCE problem.

400000

Cause: A connection attempt is already in progress.

CE Action: Wait for a logon screen or until an SRC other than 400000 is displayed. If attempting to stop continuous retries, wait and retry the attempt in a few seconds.

400100

Cause: A connect request was rejected; the link is not active.

CE Action: Wait 1 minute, and then try the connect request again. If still unsuccessful, report to the customer that there is a modem/DCE or network problem.

400200

Cause: The format is not valid; the first character of the command must be an H.

CE Action: Ask the customer to correct the command and try again.

400300

Cause: One of the following conditions:

- You are trying to disconnect from an AS/400 system that is not currently connected.
- You are trying to connect to an AS/400 system that has a connection.
- There is a connection in progress.

CE Action: If the wrong AS/400 system was selected, ask the customer to correct the request and try again.

400400

Cause: A request was rejected; the logical unit (LU) name was not configured for the selected AS/400 system.

CE Action: Ask the customer to correct the configuration or select a different AS/400 system.

400500

Cause: The request was rejected. The command is not valid for this 5494 configuration.

CE Action:

- SDLC configuration: Connect (C) and Disconnect (D) commands are not valid unless the 5494 is also configured for V.25 bis. Check the 5494 configuration and correct if necessary. If V.25 bis is not configured, do not use this command.
- The command (P) is not valid unless the 5494 is configured for concurrent host attachment. If concurrent host attachment is not configured, do not use this command.

400600

Cause: The format of the command is not valid.

CE Action: Ask the customer to correct the link establishment format and try again.

400700

Cause: The request was rejected. The AS/400 connection number is not configured.

CE Action: Ask the customer to correct the configuration or select a different AS/400 system.

400800

Cause: The request was rejected. The link to the designated AS/400 system already exists.

CE Action: Wait for a sign-on screen or until an SRC other than 400800 is displayed.

400900

Cause: The request was rejected. The 5494 is already establishing a link to the designated AS/400 system.

CE Action: Wait for a sign-on screen or until an SRC other than 400900 is displayed.

400A00

Cause: The request was rejected. The 5494 is not configured to use concurrent host attachment and you have entered a request to change your AS/400 system while the link to the current AS/400 system was active.

CE Action:

- **To change the current AS/400 system for all 5494 users:**

Vary off the 5494 at the current AS/400 system. Retry the operation..

- **To change the current AS/400 system for one or more users:**

Check your 5494 configuration. Make sure your configuration for concurrent host attachment is set to **Yes**. Retry the operation. If the error reoccurs, there may be a problem with the 5494 code. Contact 5494 support and report this SRC.

400B00

Cause: The request was rejected. The link to the ALS is already active.

CE Action: Wait for a sign-on screen or until an SRC other than 400B00 is displayed.

400C00

Cause: The request was rejected. Disconnect is only valid when there is no link to the ALS, or when the 5494 is unsuccessful in its attempts to reestablish a logical connection with the AS/400 system.

CE Action: Wait for a sign-on screen. If none appears after two minutes, retry the operation. If the error reoccurs, the 5494 has already stopped attempts to reestablish a logical connection and the command is not necessary.

400D00

Cause: The request was rejected. You tried to change the default host for a printer, but there is no printer powered on at the port/station address you entered in the system request command.

CE Action: Power on the printer for which you are trying to change the host, and retry the command. If the printer is on, verify the printer is being recognized by the 5494 at the port/station address specified either from the operator panel (press **Req**, type **210**, and press **Enter**) or from the C5 concurrent diagnostics screen.

410000

Cause: An Exchange Station Identification (XID) exchange protocol error occurred. This could be a temporary condition. If it lasts for longer than 1 minute, there is a configuration problem in the 5494 or in the ALS.

CE Action: Verify the configuration. If the problem persists, ask the customer to contact the ALS operator or network service representative.

410100

Cause: One of the following Exchange Station Identification (XID) command length errors was detected:

- The I-field is greater than 255 bytes.
- The I-field is less than 29 bytes.
- The XID command length field does not match the I-field length.

There is a system problem or configuration problem in the ALS.

CE Action: Ask the customer to report the problem to the ALS operator or network service representative.

410200

Cause: An Exchange Station Identification (XID) contained an unsupported I-field format.

There is a system problem or configuration problem in the ALS.

CE Action: Ask the customer to contact the ALS operator or network service representative and report the problem.

410300

Cause: Exchange Station Identification (XID) command exchange state indicators are set to Not Supported.

There is a system problem or configuration problem in the ALS.

CE Action: Ask the customer to contact the ALS operator or network service representative and report the problem.

410400

Cause: An XID3 command did not specify Synchronous Data Link Control (SDLC) link protocol.

There is a system problem or configuration problem in the ALS.

CE Action: Ask the customer to contact the ALS operator or network service representative and report the problem.

410500

Cause: An XID3 command specified asynchronous balanced mode (ABM) support.

There is a system problem or configuration problem in the ALS.

CE Action: This is an AS/400 system problem. Ask the customer to contact the ALS operator or network service representative and report the problem.

410600

Cause: XID3 command specifies that an adjacent link station (ALS) is secondary.

There is a system problem or configuration problem in the ALS.

CE Action: This is an AS/400 system problem. Ask the customer to contact the ALS operator or network service representative and report the problem.

410700

Cause: An XID3 command specified a maximum basic transmission unit (BTU) length less than 265 bytes.

There is a system problem or configuration problem in the ALS.

CE Action: This is an AS/400 system problem. Ask the customer to contact the ALS operator or network service representative and report the problem.

410800

Cause: An XID3 command specified a Synchronous Data Link Control (SDLC) profile that is not valid.

There is a system problem or configuration problem in the ALS.

CE Action: This is an AS/400 system problem. Ask the customer to contact the ALS operator or network service representative and report the problem.

410900

Cause: The XID3 command specifies a maximum I-frame's outstanding value that is not valid or not supported.

There is a system problem or configuration problem in the ALS.

CE Action: Ask the customer to contact the ALS operator or network service representative and report the problem.

411200

Cause: The ALS reported an error in the Exchange Station Identification (XID) response received from the 5494. There could be a mismatch between the 5494 and the ALS configuration.

The 3-byte error offset received in the control vector is logged as sense data.

CE Action:

1. While this SRC is being displayed on the 5494 operator panel, press the **right arrow (>)** on the keypad to display the sense bytes for this SRC.
2. Record this SRC and the sense bytes.
3. For a new or changed installation or configuration:

Verify the 5494 configuration.

- Check the 5494 ID number. If one was configured, verify that it is correct.
- Check the 5494 CP name. Verify that it is correct and that it is the same value the ALS expects.

If you find no problem, go to step [4](#).

4. For an existing, unchanged installation or configuration:

If the configuration is correct, ask the customer to call the ALS operator and make sure that the controller descriptions for the 5494 are active. If they are active and the problem persists, ask the customer to report this SRC and the sense bytes to the ALS operator or the network service

representative.

420000

Cause: A timeout occurred on completion of a Change Number of Sessions (CNOS) exchange. This could be caused by an AS/400 system or communication network problem.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: Try to restart communication with the AS/400 system. If still unsuccessful, ask the customer to report the problem to the AS/400 system operator.

420100

Cause: A change number of sessions (CNOS) reply contains unacceptable values. This indicates a configuration problem in the AS/400 system, probably in the mode configuration used for this connection.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: Ask the customer to report the problem to the AS/400 system operator.

420200

Cause: There was a format error in a change number of sessions (CNOS) general data stream (GDS) reply. This indicates an AS/400 system problem.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: Ask the customer to report the problem to the AS/400 system operator.

4203xx

Cause: The AS/400 system returned an abnormal change number of sessions (CNOS) general data stream (GDS) reply. This indicates an AS/400 system configuration problem.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: Ask the customer to report the problem to the AS/400 system operator. The *xx* in the SRC is the reply modifier. If *xx* = 02, the 5494 **mode name** is not defined in the AS/400 system.

Note: Other values for *xx* are described in *Systems Network Architecture, Formats*.

420400

Cause: A timeout occurred on completion of a change number of sessions (CNOS) exchange. This could be caused by an AS/400 or communication network problem. The controller is currently retrying the connection at 10-minute intervals.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: Report the problem to the AS/400 system operator. Wait for the connection to be re-established, or a different error code.

421000

Cause: The 5494 received a negative response to the change number of sessions (CNOS) BIND (sent to activate a session with the logical unit). This indicates a configuration or network problem.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

Note: The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the 5494 operator panel, press the **right arrow** (>) on the keypad.

CE Action: Try to restart communication with the AS/400 system. If still unsuccessful, ask the customer to report the problem to the AS/400 system operator.

4211xx

Cause: The 5494 received an UNBIND of type xx. This indicates a configuration or network problem.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

Notes:

1. For values and descriptions of xx, refer to *Systems Network Architecture, Formats*.

2. The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the 5494 operator panel, press the **right arrow** (>) on the keypad.

CE Action: Try to restart communication with the AS/400 system. If still unsuccessful, ask the customer to report the problem to the AS/400 system operator.

421200

Cause: An error was detected during establishment or progress of the LU 6.2 change number of sessions (CNOS) between the 5494 and the AS/400 system. The 5494 received a Functional Management Header 7 (FMH7) indicating session termination. This could be a normal termination, or, if this

error occurs frequently, there can be a configuration or AS/400 system problem.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

Note: The last 4 bytes of this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the 5494 operator panel, press the **right arrow** (>) on the keypad.

CE Action: Verify the configuration, and then ask the customer to try the operation again. If the problem reoccurs, ask the customer to report the problem to the AS/400 system operator.

421300

Cause: An error was detected during establishment or progress of the change number of sessions (CNOS) between the 5494 and the AS/400 system. The 5494 received a Conditional End Bracket (CEB), indicating session termination. This could be a normal termination or, if this error occurs frequently, there may be a configuration or AS/400 system problem.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: Verify the configuration, then retry the connection attempt. If the error reoccurs, ask the customer to report the problem to the AS/400 system operator.

4221xx

Cause: The 5494 sent an UNBIND of type xx. This indicates a configuration or network problem.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

Notes:

1. For values and descriptions of xx, refer to *Systems Network Architecture, Formats*.

2. The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the 5494 operator panel, press the **right arrow** (>) on the keypad.

CE Action: Try to restart communication with the AS/400 system. If still unsuccessful, ask the customer to report the problem to the AS/400 system operator.

430000

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system (controller session). A timeout on the completion of the controller session occurred. This could be caused by an AS/400 system problem or communication network problem.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: Ask the customer to try the operation again. If the problem reoccurs, ask the customer to report the problem to the AS/400 system operator.

430001

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system (controller session). A timeout occurred on completion of a controller session. This could be caused by an AS/400 system or communication network problem. The controller is retrying the connection at 10-minute intervals.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: Ask the customer to contact the AS/400 system operator. Wait for the connection to be reestablished or for a different error code to appear.

431000

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system (controller session). The 5494 received a negative response to the controller session BIND (sent to activate a session between the logical unit). This indicates a configuration or network problem.

Note: The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the 5494 operator panel, press the **right arrow** (>) on the keypad.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: Verify the configuration, and then ask the customer to try the operation again. If the problem reoccurs, ask the customer to report the problem to the AS/400 system operator.

4311xx

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system (controller session). The 5494 received an UNBIND of type xx. This indicates a configuration or AS/400 system problem.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

Notes:

1. For values and descriptions of xx, refer to *Systems Network Architecture, Formats*.
2. The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the 5494 operator panel, press the **right arrow** (>) on the keypad.

CE Action: Verify the configuration, and then ask the customer to try the operation again. If the problem reoccurs, ask the customer to report the problem to the AS/400 system operator.

431200

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system. The 5494 received a Functional Management Header 7 (FMH7) indicating session termination. This could be a normal termination, or, if this error occurs frequently, there can be a configuration or AS/400 system problem.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

Note: The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the 5494 operator panel, press the **right arrow** (>) on the keypad.

CE Action: Verify the configuration, and then ask the customer to try the operation again. This problem may occur if the AS/400 system is powered up and all the subsystems are not restarted when the session establishment is attempted. The 5494 will retry session establishment under these circumstances. If the problem reoccurs, ask the customer to report the problem to the AS/400 system operator.

431300

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system. The 5494 received a conditional end bracket (CEB), indicating session termination. This could be a normal termination or, if this error occurs frequently, there may be a configuration or AS/400 system problem. The controller is attempting to re-establish the session.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: If the AS/400 is in an operational state, then verify the configuration. Otherwise, wait for the connection to be re-established, or a different error code to be displayed.

4321xx

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system. The 5494 sent an UNBIND of type xx. This indicates an AS/400 system problem.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

Notes:

1. For values and descriptions of xx, refer to *Systems Network Architecture, Formats*.

2. The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the 5494 operator panel, press the **right arrow** (>) on the keypad.

CE Action: Ask the customer to try the operation again. If the problem reoccurs, ask the customer to report the problem to the AS/400 system operator.

438904

Cause: The AS/400 system did not accept the 5494 connection request because the controller description was not found.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: Verify the 5494 configuration. Pay special attention to the 5494 CP name and LU name. Then, ask the customer to try the operation again. If the problem reoccurs, ask the customer to report the problem to the AS/400 system operator and have the operator verify that either the remote location name in the 5494 for the RWS controller description matches the remote CP name in the APPC controller description, or the remote CP name and remote location name are defined in a configuration list.

438905

Cause: The AS/400 system did not accept the 5494 connection request because this 5494 description was already active.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: Verify the 5494 configuration. Pay special attention to the 5494 CP name and LU name. Then, ask the customer to try the operation again. If the problem reoccurs, ask the customer to report the problem to the AS/400 system operator and have the operator verify that either the remote location name in the 5494 for the RWS controller description matches the remote CP name in the APPC controller description, or the remote CP name and remote location name are defined in a configuration list.

438908

Cause: The AS/400 system did not accept the 5494 connection request because this 5494 description has been varied offline.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: The problem could be due to a temporary condition. Ask the customer to try the operation again. If the problem reoccurs, have the AS/400 system operator vary on this 5494 remote workstation (RWS) controller description.

438909

Cause: The AS/400 system did not accept the 5494 connection request because the 5494 recovery is pending.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: The problem could be due to a temporary condition. Ask the customer to try the operation again. If the problem reoccurs, have the AS/400 system operator reset this 5494 RWS controller description.

438910

Cause: The AS/400 system did not accept the 5494 connection request because the recovery of this 5494 has been cancelled.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: The problem could be due to a temporary condition. Ask the customer to try the operation again. If the problem reoccurs, have the AS/400 system operator reset this 5494 RWS controller description.

438911

Cause: The AS/400 system did not accept the 5494 connection request because this 5494 description is in a fail state.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: The problem could be due to a temporary condition. Ask the customer to try the operation again. If the problem reoccurs, have the AS/400 system operator reset this 5494 RWS controller description.

438912

Cause: The AS/400 system did not accept the 5494 connection request because the AS/400 system has an internal error.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: The problem could be due to a temporary condition. Ask the customer to try the operation again. If the problem reoccurs, have the AS/400 system operator reset the appropriate line, advanced program-to-program communication (APPC) controller description, and RWS controller description.

439900

Cause: Data that is not valid was received from the AS/400 system while waiting for a response to the 5494 connection request.

This indicates an AS/400 system configuration or system problem.

The first sense byte identifies which AS/400 system the 5494 was attempting to contact when the error occurred. The meanings are: 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

CE Action: Ask the customer to report the problem to the AS/400 system operator.

4411xx

Cause: An error was detected during establishment or progress of the LU 6.2 session for an NWS. The 5494 received an UNBIND of type xx. This indicates an AS/400 system problem.

The first sense byte identifies the LSID of the NWS in the low six bits. The high two bits identify the AS/400 system the 5494 was attempting to contact when the error occurred. The meanings of the high two bits are: B'00' = H1, B'01' = H2, B'10' = H3, and B'11' = H4.

Notes:

1. For values and descriptions of xx, refer to *Systems Network Architecture, Formats*.

2. The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the 5494 operator panel, press the **right arrow** (>) on the keypad.

CE Action: Ask the customer to report the problem to the AS/400 system operator.

441200

Cause: An error was detected during establishment or progress of the LU 6.2 session for an NWS. The 5494 received a Functional Management Header 7 (FMH7) indicating an abnormal session termination. This indicates an AS/400 system problem.

The first sense byte identifies the LSID of the NWS in the low six bits. The high two bits identify the AS/400 system the 5494 was attempting to contact when the error occurred. The meanings of the high two bits are: B'00' = H1, B'01' = H2, B'10' = H3, and B'11' = H4.

Note: The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the 5494 operator panel, press the **right arrow** (>) on the keypad.

CE Action: Ask the customer to report the problem to the AS/400 system operator.

4421xx

Cause: An error was detected during establishment or progress of the LU 6.2 session for an NWS. The 5494 sent an UNBIND of type *xx*. This indicates a network or AS/400 system problem.

The first sense byte identifies the LSID of the NWS in the low six bits. The high two bits identify the AS/400 system the 5494 was attempting to contact when the error occurred. The meanings of the high two bits are: B'00' = H1, B'01' = H2, B'10' = H3, and B'11' = H4.

Notes:

1. For values and descriptions of *xx*, refer to *Systems Network Architecture, Formats*.

2. The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the 5494 operator panel, press the **right arrow** (>) on the keypad.

CE Action: Ask the customer to report the problem to the AS/400 system operator.

4500xx

Cause: An error was detected during communication with a PWS. The error occurred while trying to initiate the link with the PWS. If you viewed this SRC on the LCD, the logical session identification (LSID), which identifies the failing workstation's local address, is the 2-digit value to the left of this SRC. Otherwise, refer to "[C6 Screen](#)" in topic [7.8](#) for instructions on displaying the LSID.

Note: The possible values for *xx* are:

- 01 = bad initiate link reply (incorrect length)

- 02 = bad initiate link reply (nonzero Return Code).

CE Action: This could be a PWS configuration problem. Ask the customer to verify the PWS configuration. Then, turn the PWS power **OFF (0)** and back **ON (1)**, and restart the PWS communication program.

4501xx

Cause: An error was detected during communication with a PWS. The link to the PWS was ended because a frame, that is not valid, was received from the PWS.

Note: The *xx* is the flag byte received in the frame that is not valid.

If you viewed this SRC on the operator panel, the LSID, which identifies the failing workstation's local address, is the 2-digit value to the left of this SRC. Otherwise, refer to ["C6 Screen" in topic 7.8](#) for instructions on displaying the LSID.

CE Action: This could be a PWS configuration problem. Ask the customer to verify the PWS configuration. Then, turn the PWS power **OFF (0)** and back **ON (1)**, and restart the PWS communication program.

4510xx

Cause: An error was detected during communication with a PWS. The error occurred during the Exchange Station Identification (XID) exchange with the PWS.

If you viewed this SRC on the operator panel, the LSID, which identifies the failing workstation's local address, is the 2-digit value to the left of this SRC. Otherwise, refer to ["C6 Screen" in topic 7.8](#) for instructions on displaying the LSID.

The possible values for *xx* are:

- 80 = Frame length too long
- 40 = Not a format 3 XID
- 20 = Length inconsistency between XID and input/output block (IOB) length
- 10 = XID exchange state was not B'01' or B'00'
- 08 = Link station role was not B'00'
- 04 = Maximum basic transmission unit (BTU) acceptable to PWS was less than X'109'
- 02 = PWS responded to XID with neither an XID nor a Disconnect
- 01 = XID frame length too short.

CE Action: This could be a PWS configuration problem. Ask the customer to verify the PWS configuration. Then, turn the PWS power **OFF (0)** and back **ON (1)**, and restart the PWS communication program.

4511xx

Cause: An error was detected during communication with a PWS. The link to the PWS was ended because a twinaxial data link control (TDLC) link level frame, that is not valid, was received from the PWS.

Note: The *xx* is the first byte of the control field.

If you viewed this SRC on the operator panel, the LSID, which identifies the failing workstation's local address, is the 2-digit value to the left of this SRC. Otherwise, refer to ["C6 Screen" in topic 7.8](#) for instructions on displaying the LSID.

CE Action: This could be a PWS configuration problem. Ask the customer to verify the PWS configuration. Then, turn the PWS power **OFF (0)** and back **ON (I)**, and restart PWS configuration program.

4520xx

Cause: An error was detected during communication with a PWS. The link to the PWS was ended because of a severe session state conflict between the PWS and the 5494. All sessions are terminated for this PWS.

If you viewed this SRC on the operator panel, the LSID, which identifies the failing workstation's local address, is the 2-digit value to the left of this SRC. Otherwise, refer to ["C6 Screen" in topic 7.8](#) for instructions on displaying the LSID.

CE Action: Turn the PWS power **OFF (0)** and back **ON (I)**, and then restart the PWS communication program. If necessary, make sure that the PWS communication program is correctly installed and configured.

4521xx

Cause: The LAN link with the PWS terminated due to a severe session state conflict between the PWS and the 5494. All sessions for this PWS are terminated.

CE Action: Turn the PWS power **OFF (0)** and back **ON (I)** and then restart the PWS communication program. If necessary, make sure that the PWS communication program is correctly installed and configured.

4522xx

Cause: The twinaxial data link control (TDLC) link with the PWS terminated due to the receipt of a frame with a Local Form Session Identifier (LFSID) value that is not valid in the transmission header. All sessions for this PWS are terminated.

Note: *xx* = the twinaxial device LSID.

CE Action: Turn the PWS power **OFF (0)** and back **ON (I)**, and then restart the PWS communication program. If necessary, make sure that the PWS communication program is correctly installed and configured.

4523xx

Cause: The LAN link with the PWS terminated due to receipt of a frame with a Local Form Session Identifier (LFSID) value in the transmission header that is not valid. All sessions for this PWS are terminated.

CE Action: Turn the PWS power **OFF (0)** and back **ON (1)**, and then restart the PWS communication program. If necessary, make sure that the PWS communication program is correctly installed and configured.

4524xx

Cause: The twinaxial data link control (TDLC) link with the PWS terminated due to the receipt of a frame with an Origin-Destination Assignor Identifier (ODAI) value that is not valid in the transmission header. All sessions for this PWS are terminated.

If you viewed this SRC on the operator panel, the LSID, which identifies the failing workstation's local address, is the 2-digit value to the left of this SRC. Otherwise, refer to ["C6 Screen" in topic 7.8](#) for instructions on displaying the LSID.

CE Action: Turn the power **OFF** and back **ON** at the PWS, and then restart the PWS communication program. If necessary, make sure the PWS communication program is correctly installed and configured.

4525xx

Cause: The LAN link with the PWS terminated due to receipt of a frame with an Origin-Destination Assignor Identifier (ODAI) value that is not valid in the transmission header. All sessions for this PWS are terminated.

CE Action: Turn the power **OFF** and back **ON** at the PWS, and then restart the PWS communication program. If necessary, make sure the PWS communication program is correctly installed and configured.

460000

Cause: A frame was received containing an unrecognized session address.

CE Action: This SRC could occur as part of normal session termination. If this error occurs frequently, and disrupts active customer sessions, ask the customer to report the error to the AS/400 system operator.

460100

Cause: A frame was received containing an incorrect format identification (FID) type.

CE Action: If this error occurs frequently, and disrupts active customer sessions, ask the customer to report the error to the AS/400 system operator.

460200

Cause: A frame was received that was not long enough to contain a full transmission header (TH).

CE Action: If this error occurs frequently, and disrupts active customer sessions, ask the customer to report the error to the AS/400 system operator.

460300

Cause: A frame was received that was not long enough to contain a full transmission header (TH) and request header (RH).

CE Action: If this error occurs frequently, and disrupts active customer sessions, ask the customer to report the error to the AS/400 system operator.

460400

Cause: A session control frame was received that was not long enough to contain a session control request code.

CE Action: If this error occurs frequently, and disrupts active customer sessions, ask the customer to report the error to the AS/400 system operator.

460500

Cause: A segmented frame was received. The 5494 does not support segmenting.

CE Action: If this error occurs frequently, and disrupts active customer sessions, ask the customer to report the error to the AS/400 system operator.

470100

Cause: A BIND request was received with an incorrect Origin-Destination Assignor Identifier (ODAI) value in the Local Form Session Identifier (LFSID). The communication link to the ALS was deactivated.

CE Action: Ask the customer to report the problem to the ALS operator or network service representative.

470200

Cause: A BIND request was received with an incorrect SIDH/SIDL value in the Local Form Session Identifier (LFSID). The communication link to the ALS was deactivated.

CE Action: Ask the customer to report the problem to the ALS operator or network service representative.

500001

Cause: System files or translate table data cannot be read from the system diskette.

CE Action: Turn the 5494 power **OFF (0)**, replace the system diskette with the backup diskette, and then turn the 5494 power back **ON (1)**. If the problem continues, contact 5494 Support.

- If the backup diskette corrects the problem, obtain a new system diskette.

To order a replacement diskette, in the U.S., call 1-800-334-1089. To order a replacement diskette outside the U.S., contact the local IBM branch office. Have the 5494 serial number available.

- If the problem continues, run extended diagnostics. See "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2.
 - If extended diagnostics detects the problem and posts a message code on the left-hand side of the LCD, follow the instructions for the message code.
 - If extended diagnostics cannot detect the problem, ask the customer to contact the network service representative.

500002

Cause: The current configuration specifies parameters that are not supported by the current hardware. This can occur if X.21 protocol is configured but the communication cable does not support X.21.

CE Action: Ask the customer to check the configuration parameters and correct them, if necessary. If the configuration is correct, make sure that the customer has the correct communication cable for the configured protocol.

500003

Cause: The system diskette is not compatible with the 5494 hardware.

CE Action: Replace the diskette with a valid 5494 System Diskette.

500004

Cause: You are not using a 5494 System Diskette.

CE Action: Replace the diskette with a valid 5494 System Diskette.

500005

Cause: The system diskette is write-protected.

CE Action: Remove the diskette, close the write-protect tab, and reinsert the diskette.

If the error occurred during the configuration procedure or a concurrent mode procedure on a workstation, press **Error Reset** to clear the error and ask the customer to try the operation again.

If the error occurred on a copy configuration procedure at the operator panel, press **Clear** to clear the error.

If the error occurred during the POST, turn the 5494 power to **OFF (0)**, and then back **ON (1)**.

500006

Cause: An error occurred when trying to write information to the system diskette.

CE Action: If the error occurred when trying to write information to the system diskette, replace the system diskette with the backup diskette. If the problem occurred during the configuration procedure, press **Error Reset** and try the operation again. If necessary, obtain a new system diskette.

500007

Cause: The 5494 System Diskette has been improved by a subsequent release.

CE Action: Ask the customer to see the IBM representative to obtain a more current release level of the 5494 System Diskette. The customer may continue to operate the 5494 with the current System Diskette.

500009

Cause: A value, that is not valid, was detected in the 5494 configuration file.

CE Action: Work with the customer to reconfigure the 5494.

500011

Cause: The 5494 is not in configuration mode and a valid configuration file could not be found. Configuration mode is forced.

CE Action:

For a new or changed installation or configuration: The 5494 has not been configured. Refer to the *IBM 5494 Remote Control Unit User's Guide* and work with the customer to configure the 5494.

For an existing, unchanged installation or configuration: There could be a problem with the 5494 storage. When the 5494 attempted to use the backup copy of the configuration on the system diskette, it could not find one. The 5494 POST may have already identified the problem and you could have decided to use the 5494 with the storage problem anyway.

- If a storage problem has already been identified and you want to use the 5494 anyway, the 5494 must either be reconfigured or a 5494 System Diskette that has a backup copy of the configuration file must be used.
- If a storage problem has not been identified, you should run extended diagnostics to further isolate the problem. See "[Running Extended Diagnostics \(Offline\)](#)" in [topic 4.2](#) for instructions.

500013

Cause: The 5494 communication cable is missing or not connected, or the wrong cable is being used.

CE Action:

- If you are using the Twinaxial Expansion Kit, verify that the 5494 communication cable is present and securely connected to the twinaxial adapter located in the lowest slot number.
- **If you are using token ring or Ethernet to connect to the AS/400** and you get this SRC, an incorrect communication mode parameter has been specified. The 5494 must be reconfigured to correct the communication mode parameter. Refer to the *IBM 5494 Remote Control Unit User's Guide* for instructions.
- If you are using frame relay to connect to the AS/400 system, you cannot use an EIA 232D communication cable. Verify that the communication cable is correct. If incorrect, refer to the *IBM 5494 Remote Control Unit Planning Guide* for the communication cable (V.35 or X.21) required.
- Verify that the 5494 communication cable is present and connected securely to the 5494 and the modem or DCE.

If the cable is not present, refer to the *IBM 5494 Remote Control Unit Planning Guide* to determine the communication cable required for the configuration, and then ask the customer to order the communication cable.

- If the cable is present and connected, it can be defective. Run the extended diagnostics and test all hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2.

500014

Cause: The 5494 is configured for a LAN Gateway or a LAN AS/400 connection, but the 5494 does not recognize a 5494 Token-Ring or Ethernet adapter.

CE Action: If either a Token-Ring or Ethernet adapter is installed, make sure the 5494 has been configured for the correct LAN. If the configuration is correct, run extended diagnostics and test all 5494 hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2. If neither a Token-Ring nor an Ethernet adapter is installed, ask the customer to correct the configuration.

500015

Cause: The keyboard translate table (KTT) or printer definition table (PDT) files are not set up correctly on the 5494 diskette. The KTT or PDT files will be downloaded from the AS/400 system.

CE Action: Try to use the backup diskette. Restart power and communications with the AS/400 system. If still not working, report it as a possible 5494 code problem.

500016

Cause: The 5494 experienced a microcode failure. After logging the error in the error log, the 5494 has reinitialized itself and restarted. The microcode failure information is in the previous entry in the error log. This information has also been sent to the AS/400 as an ALERT.

CE Action: Report the failure information, both SRC and sense information from the microcode failure entry in the error log, to 5494 Support.

500018

| **Cause:** The 5494 was restarted on the date and time in this entry. This is not an error.

CE Action: None

500019

Cause: Both an Ethernet adapter and a Token-Ring adapter are installed in the 5494. You may only use one of these adapters. The 5494 uses the adapter for which it is configured. If no configuration exists, it uses the adapter in the lowest slot number.

CE Action: None

50001A

Cause: The configuration file was changed, using the 5494 Utility Program interactively. This is an informational message that allows you to know that, at the next initialization of the 5494, the changed configuration file is in effect.

CE Action: None

| **50001B**

| **Cause:** 5494 has been started with a 5494 FR-TR Bridge System
| Diskette. The configuration file is for a configuration not
| supported by the FR-TR Bridge diskette.

| **CE Action:** Either restart with the 5494 Base System Diskette or
| enter configuration mode and change your configuration.

| **50001C**

| **Cause:** 5494 has been started with a 5494 Base System Diskette. The
| configuration file is for a configuration not supported by the base
| System Diskette.

| **CE Action:** Either restart with the 5494 FR-TR Bridge System
| Diskette or enter configuration mode and change your configuration.

50001D

| **Cause:** 5494 has been started with a FR-TR Bridge System Diskette.
| However, the additional memory provided by the 5494 Memory Expansion
| Feature has not been installed.

| **CE Action:** Install the memory and run setup using the instructions I provided with the feature.

| **50001E**

| **Cause:** The 5494 was restarted on the date and time in this entry I using a configuration file on the System Diskette. This is not an I error.

| **CE Action:** None.

| **5000AB**

| **Cause:** The hardware timer interrupt was not serviced.

| **CE Action:** None. This code is informational.

5101xx

Cause: A problem occurred while applying or removing changes contained in the code change file on the system diskette. No changes were installed.

xx is one of the following:

- 00 Change file header is not valid.
- 01 EC level is not valid.
- 02 EC level length is not valid.
- 03 EC data level is not valid.
- 05 Change file length is not valid.
- 10 Change section length is not valid.
- 20 Error occurred while removing changes that were previously installed from the system diskette. No AS/400 system changes have been installed.

CE Action: Try the power-on sequence again. If the problem reoccurs, insert the backup diskette. Turn the 5494 power **OFF (0)**, and then back **ON (1)**.

If the problem occurs with the backup diskette, contact 5494 Support and report a possible 5494 code problem.

5102xx

Cause: A problem occurred while applying changes contained in the code change file from the AS/400 system. No changes were installed.

xx is one of the following:

- 00 AS/400 system file change file header is not valid.
- 01 AS/400 system file EC level is not valid.
- 02 AS/400 system file EC level length is not valid.
- 03 AS/400 system file EC data level is not valid.
- 05 AS/400 system file change file length is not valid.
- 10 AS/400 system file change section length is not valid.

CE Action: Restart communication. If the problem reoccurs, ask the customer to contact the AS/400 system operator.

520000

Cause: The 5494 did not find a printer that was available for local copy-to-printer operation.

CE Action: At the workstation, press **Error Reset**. Make sure that a printer is turned **ON (I)** and available, and ask the customer to try the operation again.

520001

Cause: The device at the address selected for the copy-to-printer operation is not a printer. The 5494 may not be configured correctly.

CE Action: Make sure the settings for port number and station address of the printer are configured correctly in the 5494.

520002

Cause: The designated printer is in session, turned **OFF (0)**, or in error state, or no device is turned **ON (I)** at this address.

CE Action: At the workstation, press **Error Reset**. If the designated printer is in session, wait until printing is completed and ask the customer to try the operation again. Otherwise, correct any error conditions at the printer and retry the operation.

520003

Cause: The 5494 lost communication with the printer while the print operation was in progress.

CE Action: Press **Error Reset**. If you want to restart the print job, make sure that the printer is turned **ON (I)** and ready, and correct any error conditions. Ask the customer to try the operation again.

540001

Cause: A Token-Ring or Ethernet adapter error counter has overflowed.

This SRC indicates that there are potential problems on the LAN. The 5494 records the overflow data in the 5494 error log. Refer to the following description of sense bytes to determine the counter that overflowed:

Token-Ring Sense Bytes:

0001	Line errors
0002	Internal errors
0003	Burst errors
0004	Access control (A/C) errors
0005	Abort delimiters
0007	Lost frames
0008	Receive congestion count
0009	Frame copied errors
000A	Frequency errors
000B	Token errors.

Ethernet Sense Bytes:

0005	Abort delimiters
0008	Receive congestion count

CE Action: Information only, no action is required.

540010

Cause: The Token-Ring or Ethernet adapter in the 5494 failed to initialize correctly.

| Sense data:

| **byte 1:**
01=Token-Ring card

| 02=Ethernet card

| **byte 2:**
slot number containing the adapter

| **Note:** To obtain sense data, press the right arrow (>) key on the

| 5494 keypad when this SRC ID is displayed.

CE Action: The Token-Ring or Ethernet adapter may be failing. Run extended diagnostics and test all 5494 hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2.

540011

Cause: Manual recovery in progress due to operator intervention.

CE Action: None.

540021

Cause: Temporary beaconing. The Token-Ring network is recovering from a beaconing condition.

CE Action: None.

540105

Cause: (LAN Gateway) The command to the Token-Ring or Ethernet adapter has failed. The sense bytes are *xxyy*, where *xx* is the command that was issued to the adapter and *yy* is the return code from the adapter.

Note: To obtain sense data, press the **right arrow** (>) key on the 5494 keypad when this SRC ID is displayed.

CE Action: Run the extended diagnostics. See "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2.

540106

Cause: (LAN Gateway) Adapter open error. There was a problem when the 5494 attempted to attach to the LAN (Open). The 5494 will try again to attach to the LAN. For token ring, the problem could be a mismatch of the Token-Ring speed of the devices on the ring.

CE Action: For token ring, make sure that all the devices attached to the ring are set to the same speed.

If the 5494 cannot attach to the LAN after retrying, note the following sense byte information and then report the problem to the customer. The customer should refer to the *IBM Token-Ring Network Problem Determination Guide* for instructions on correcting a Token-Ring error.

Note: To obtain sense data, press the right arrow on the 5494 keypad when this SRC is displayed.

Token-Ring Sense Bytes:

1100	Lobe media function failure
2600	Physical insertion ring failure
2700	Physical insertion ring failure; ring beaconing

2A00 Physical insertion error timeout
2D00 No monitor was detected
3200 Address verification signal loss
3500 Address verification timeout
3600 Address verification ring failure
3700 Address verification ring beaconing
3800 Address verification duplicate node address
3A00 Address verification remove received
4200 Ring poll signal loss
4500 Ring poll timeout
4600 Ring poll ring failure
4700 Ring poll beaconing
4A00 Ring poll remove received
5500 Request parameter timeout
5600 Request parameter ring failure
5700 Request parameter ring beaconing
5900 Request parameter request
5A00 Request parameter remove received.

Ethernet Sense Bytes:

3300 Unable to transmit
3800 Address verification duplicate node address

540107

Cause: (LAN Gateway) The 5494 detected an error when it transmitted a LAN frame. The LAN data link is disconnected.

Sense data consisting of a 1-byte cause code and the 6-byte LAN address of the PWS that detected the error is recorded in the 5494 error log with this SRC. See "[Displaying the 5494 Error Log](#)" in topic [6.2.4](#) for instructions on viewing the 5494 error log. The cause code is one of the following:

22 Error on frame transmission
23 Error in frame transmitted or read-back checking
24 Unauthorized medium access control (MAC) frame.

CE Action:

- If the 5494 continues to report this problem, check the LAN Gateway configuration retry count (see "[Verifying the 5494 Configuration](#)" in topic [4.4](#)). It may be too low.

- Work with the customer to reconfigure the 5494 to increase the LAN Gateway retry count. Refer to the *IBM 5494 Remote Control Unit User's Guide* for instructions.
- Ask the customer to try the operation again.
- If the problem persists, restart Client Access/400 running on the PWS indicated by the 6-byte LAN address.

540108

Cause: (LAN Gateway) A command to the Token-Ring or Ethernet adapter has failed. The sense bytes are *xxyy*, where *xx* is the command that was issued to the adapter and *yy* is the return code from the adapter.

Note: To obtain the sense data, press the **right arrow** (>) key on the 5494 keypad when this SRC is displayed.

CE Action: If this SRC reoccurs, the Token-Ring or Ethernet adapter in the 5494 may be defective. Run extended diagnostics and test all hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in topic [4.2](#). If extended diagnostics did not detect a problem, then call 5494 Support and report the SRC and sense data.

540109

Cause: (LAN Gateway) The 5494 received an Exchange Station Identifier (XID) that is not valid from a LAN Gateway-connected PWS. The sense bytes information that is logged in the 5494 error log indicates the LAN address of the PWS.

CE Action: Make sure the PWS communication program is correctly installed and configured. Ask the customer to try the operation again.

540122

Cause: (Token-Ring Gateway) The 5494 detected a Token-Ring network wire fault. There is a problem with the lobe between the 5494 and the multistation access unit (MSAU) to which it is connected.

The Token-Ring adapter in the 5494 is closed. The 5494 will continue to try to reopen the adapter until a disconnect command is received from the 5494 operator or until the problem is repaired and the adapter reopens.

Refer to the *IBM 5494 Remote Control Unit User's Guide* for information about disconnecting the communication link.

CE Action: Record the symptom *wire fault*, and then ask the customer to refer to the *IBM Token-Ring Network Problem Determination Guide* to repair the problem between the 5494 and the MSAU.

540123

Cause: (Token-Ring Gateway) The 5494 has removed itself from the Token-Ring network.

CE Action:

1. Check with the Token-Ring network administrator or manager to determine if an adapter remove was issued and was valid.

2. If the network administrator or manager did not issue an adapter removal, go to the operator panel and try the Adapter Open command again from the 5494 operator panel by pressing **Req**, typing **230**, and then pressing **Enter**.

3. If this SRC reoccurs, the 5494 Token-Ring adapter could be defective. Run extended diagnostics and test all hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in topic [4.2](#) for instructions.

If the extended diagnostics did not detect a problem, contact the Token-Ring network administrator and report that an auto-removal command was received.

540124

Cause: (Token-Ring Gateway) The 5494 received a remove command from the Token-Ring network.

CE Action:

1. Check with the Token-Ring network administrator or manager to determine if an adapter remove was issued and was valid.

2. If the network administrator or manager did not issue an adapter remove, go to the operator panel and try the Adapter Open command again from the 5494 operator panel by pressing **Req**, typing **230**, and then pressing **Enter**.

3. If this SRC occurs again, the 5494 Token-Ring adapter could be defective. Run extended diagnostics and test all hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in topic [4.2](#) for instructions.

If the extended diagnostics did not detect a problem, contact the Token-Ring network administrator and report that a remove command was received.

540125

Cause: (Token-Ring Gateway) The Token-Ring network is beaconing due to a permanent error on the ring.

CE Action: Ask the customer to refer to the *IBM Token-Ring Network Problem Determination Guide* and use *beaconing* as the symptom to repair the problem.

5402wd

Cause: An error has occurred during device driver initialization. The values for *w* and *d* identify the error type and device driver, respectively. The sense data provides additional information on the device driver.

Note: To obtain sense data, press the right arrow key on the 5494 keypad when this SRC is displayed.

CE Action: If this SRC reoccurs, the token-ring, Ethernet, or host-twinaxial adapter in the 5494 may be defective. Run extended diagnostics and test all 5494 hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in topic [4.2](#). If extended diagnostics do not detect a problem, call 5494 Support and report the SRC and sense data.

540404

Cause: (LAN AS/400 Attachment) The ALS did not respond to the TEST command sent from the 5494. This indicates that the 5494 cannot contact the ALS. The 5494 will continue to send the TEST command until the ALS responds or an operator initiates a Disconnect.

CE Action: Ask the customer to contact the ALS operator to determine if the ALS is operational and configured for the 5494. Also, make sure that the line is varied on at the AS/400 system.

- If the line is varied off at the AS/400 system, have the line varied on.
- If the ALS is operational, the AS/400 Token-Ring or Ethernet address configured in the 5494 is incorrect. Reconfigure the 5494 (refer to the *IBM 5494 Remote Control Unit User's Guide*), making sure that the AS/400 Token-Ring or Ethernet address matches the address for the ALS.
- If the ALS is not operational, wait for it to become operational, or refer to the *IBM 5494 Remote Control Unit User's Guide* to establish communication with an alternate AS/400.

540405

Cause: (LAN AS/400 Attachment) The ALS did not respond to the XID3 command sent from the 5494. This indicates that the 5494 cannot contact the ALS. The 5494 will continue to send the XID3 command until the ALS responds or an operator initiates a Disconnect.

CE Action: Ask the customer to contact the ALS operator to determine if the ALS is operational. Also, verify that the AS/400 system's APPC controller description and RWS controller description for this 5494 are varied on.

- If the APPC controller description or RWS controller description is not varied on at the AS/400 system, ask the AS/400 system operator to vary on the APPC and RWS controllers.
- If the ALS is operational, the AS/400 Token-Ring or Ethernet address configured in the 5494 is incorrect. Reconfigure the 5494 (refer to the *IBM 5494 Remote Control Unit User's Guide*), making sure that the AS/400 Token-Ring or Ethernet address matches the address for the ALS.
- If the ALS is not operational, wait for it to become operational or refer to the *IBM 5494 Remote Control Unit User's Guide* to establish communication with an alternate AS/400.

540406

Cause: (LAN AS/400 Attachment) Adapter open error. There was a problem when the 5494 attempted to attach to the LAN (Open). The 5494 will try again to attach to the LAN. For token ring, the problem could be caused by a mismatch of the Token-Ring speed of the devices on the ring.

CE Action: For token ring, make sure that all devices attached to the ring are set to the same speed.

If the 5494 cannot attach to the LAN after retrying, note the following sense byte information and then report the problem to the customer.

Note: To obtain the sense data, press the **right arrow** (>) on the 5494 keypad when the 540406 SRC is displayed. The customer should refer to the *IBM Token-Ring Network Problem Determination Guide* for instructions on correcting the error.

Token-Ring Sense Bytes:

2600 Physical insertion ring failure
2700 Physical insertion ring failure ring beaconing
2A00 Physical insertion error timeout
2D00 No monitor was detected
3200 Address verification signal loss
3500 Address verification timeout
3600 Address verification ring failure
3700 Address verification ring beaconing
3800 Address verification duplicate node address
3A00 Address verification remove received
4200 Ring poll signal loss
4500 Ring poll timeout
4600 Ring poll ring failure
4700 Ring poll beaconing
4A00 Ring poll remove received
5500 Request parameter timeout
5600 Request parameter ring failure
5700 Request parameter ring beaconing
5900 Request parameter request
5A00 Request parameter remove received.

Ethernet Sense Bytes:

3300 Unable to transmit
3800 Address verification duplicate node address

540407

Cause: (LAN AS/400 Attachment) The 5494 detected an error when it transmitted a LAN frame. The LAN data link is disconnected. The 5494 continues to send TEST commands to the LAN to reestablish the connection.

Sense data consisting of a 1-byte cause code and the 6-byte AS/400 LAN address is available by pressing the **right arrow (>)** on the 5494 keypad when this error is displayed.

The cause code is one of the following:

- 22 Error on frame transmission
- 23 Error in frame transmitted or read-back checking
- 24 Unauthorized MAC frame.

CE Action:

1. If the 5494 continues to report this problem, check the Token-Ring or Ethernet configuration retry count (see "[Verifying the 5494 Configuration](#)" in [topic 4.4](#)). It may be too low.
2. Work with the customer to reconfigure the 5494 to increase the retry count. Refer to the *IBM 5494 Remote Control Unit User's Guide* for instructions.
3. Try the transmission again.

540408

Cause: (LAN AS/400 Attachment) A command to the Token-Ring or Ethernet adapter has failed. The sense bytes are *xxyy*, where *xx* is the command that was issued to the adapter and *yy* is the return code from the adapter.

Note: To obtain the sense data, press the **right arrow** (>) on the 5494 keypad when this SRC is displayed.

CE Action: If this SRC reoccurs, the Token-Ring or Ethernet adapter in the 5494 may be defective. Run extended diagnostics and test all hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in [topic 4.2](#). If extended diagnostics did not detect a problem, then call 5494 Support and report the SRC and sense data.

540422

Cause: (Token-Ring AS/400 Attachment) The 5494 detected a Token-Ring network wire fault. There is a problem with the lobe between the 5494 and the multistation access unit (MSAU) to which it is connected.

The Token-Ring adapter in the 5494 is closed. The 5494 will continue to try to open the adapter until a disconnect command is received from a 5494 operator or until the problem is repaired and the adapter reopens. Refer to the *IBM 5494 Remote Control Unit User's Guide* for information on the Disconnect command.

CE Action: Record the symptom *wire fault*, and then ask the customer to refer to the *IBM Token-Ring Network Problem Determination Guide* to repair the problem.

540423

Cause: (Token-Ring AS/400 Attachment) Auto-removal. The 5494 has removed itself from the Token-Ring network.

CE Action:

1. Check with the Token-Ring network administrator or manager to determine if an adapter remove was issued and was valid.
2. If the network administrator or manager did not issue an adapter remove, go to the operator panel and try the Adapter Open command again from the 5494 operator panel by pressing **Req**, typing **230**, and then pressing **Enter**.
3. If this SRC occurs again, the 5494 Token-Ring adapter can be defective. Run extended diagnostics and test all hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in [topic 4.2](#).

If the extended diagnostics did not detect a problem, contact the Token-Ring network administrator and report that an auto-removal command was received.

540424

Cause: (Token-Ring AS/400 Attachment) The 5494 received a remove command from the Token-Ring network.

CE Action:

1. Check with the Token-Ring network administrator or manager to determine if an adapter remove was issued and was valid.
2. If the network administrator or manager did not issue an adapter remove, go to the operator panel and try the Adapter Open command again from the 5494 operator panel by pressing **Req**, typing **230**, and then pressing **Enter**.
3. If this SRC reoccurs, the 5494 Token-Ring adapter can be defective. Run extended diagnostics and test all hardware. See "[Running Extended Diagnostics \(Offline\)" in topic 4.2](#).

If the extended diagnostics did not detect a problem, contact the Token-Ring network administrator and report that a remove command was received.

540425

Cause: (Token-Ring AS/400 Attachment) The Token-Ring network is beaconing due to a permanent error on the Token Ring.

CE Action: Ask the customer to refer to the *IBM Token-Ring Network Problem Determination Guide* and use *beaconing* as the symptom.

560010

Cause: (Frame Relay) The 5494 host-twinaxial adapter failed to initialize correctly.

CE Action: The host-twinaxial adapter may be defective. Run extended diagnostics and test all 5494 hardware. See "[Running Extended Diagnostics \(Offline\)" in topic 4.2](#). If extended diagnostics do not detect a problem, call 5494 support.

560011

Cause: (Frame Relay) The local management interface (LMI) of the network is not responding or has stopped responding. There may be a configuration mismatch between the 5494 LMI mode and the network, or the network may not be available.

The 5494 will continue to poll the network and attempt to establish a connection with the AS/400 system.

CE Action:

- **For a new or changed installation or configuration:** Make sure the 5494 LMI mode configuration matches that of the frame-relay network.

- **For an existing or unchanged installation or configuration:** Wait for the network to become available. If the error continues, ask the customer to contact the network service representative.

560404

Cause: (Frame Relay) The ALS did not respond to the TEST command sent from the 5494. This indicates that the 5494 cannot contact the ALS. The 5494 continues to send the TEST command until the ALS responds or an operator initiates a Disconnect.

CE Action: Ask the customer to contact the ALS operator to determine if the ALS is operational and configured for the 5494. Also, make sure that the line is varied on at the AS/400 system.

- If the line is varied off at the AS/400 system, have the line varied on.
- If the ALS is operational, make sure the data link connection identifier (DLCI) configured in the 5494 matches the DLCI available from the network service provider.
- If the ALS is not operational, wait for it to become operational, or refer to the *IBM 5494 Remote Control Unit User's Guide* to establish communication with an alternate AS/400 system.

560405

Cause: (Frame Relay) The ALS did not respond to the XID3 command sent from the 5494. This indicates that the 5494 cannot contact the ALS. The 5494 will continue to send the XID3 command until the ALS responds or an operator initiates a Disconnect.

CE Action: Ask the customer to contact the ALS operator to determine if the ALS is operational. Also, verify that the AS/400 system's APPC controller description and RWS controller description for this 5494 are varied on.

- If the APPC controller description or RWS controller description is not varied on at the AS/400 system, ask the AS/400 system operator to vary on the APPC and RWS controllers.
- If the ALS is operational, make sure the data link connection identifier (DLCI) configured in the 5494 matches the DLCI available from the network service provider.
- If the ALS is not operational, wait for it to become operational or refer to the *IBM 5494 Remote Control Unit User's Guide* to establish communication with an alternate AS/400 system.

560406

Cause: (Frame Relay) Adapter open error. There was a problem when the 5494 attempted to attach to the frame-relay network. The 5494 will try again to attach to the network.

Note: To obtain sense data, press the right arrow key on the 5494 keypad when this SRC is displayed.

Sense Bytes:

Unable to transmit

CE Action: The 5494 host-twinaxial adapter may be defective. Run extended diagnostics and test all 5494 hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2. If extended diagnostics do not detect a problem, call 5494 Support and report the SRC and sense data.

560407

Cause: (Frame Relay) The 5494 detected an error when it transmitted a frame. The data link is disconnected. The 5494 continues to send TEST commands to the ALS to reestablish the connection.

Sense data consisting of a 1-byte cause code and a 6-byte hexadecimal frame-relay address is available. The cause code is one of the following:

- 22 Error in frame transmission
- 23 Error in frame transmitted or read-back checking
- 24 Unauthorized medium access control (MAC) frame.

The last three digits of the frame-relay address is the data link connection identifier (DLCI).

Note: To obtain sense data, press the right arrow key on the 5494 keypad when this SRC is displayed.

CE Action: The 5494 host-twinaxial adapter may be defective. Run extended diagnostics and test all 5494 hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2. If extended diagnostics do not detect a problem, call 5494 Support and report the SRC and sense data.

560408

Cause: (Frame Relay) A command to the 5494 host-twinaxial adapter has failed. The sense bytes are *xxyy*, where *xx* represents the command that was issued to the adapter and *yy* represents the return code from the adapter.

Note: To obtain sense data, press the right arrow key on the 5494 keypad when this SRC is displayed.

CE Action: The 5494 host-twinaxial adapter may be defective. Run extended diagnostics and test all 5494 hardware. See "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2. If extended diagnostics do not detect a problem, call 5494 Support and report the SRC and sense data.

560409

Cause: (Frame Relay) A configured data link connection identifier (DLCI) has not been reported by the network. The 5494 attempts to contact the network using all DLCIs configured for hosts H1 - H4. The sense bytes *xxxx* identify which DLCI has not been reported.

Note: To obtain sense data, press the right arrow key on the 5494 keypad when this SRC is displayed.

CE Action: If the DLCI noted in the sense data is for a configured host other than the current one you are attempting to contact, ignore this message. The 5494 continues attempts to contact the network on this DLCI, but you should obtain a sign-on screen through your current connection.

If the DLCI noted is for the current AS/400 system you are attempting to contact then:

1. For a new or changed installation or configuration: You may have entered the DLCI incorrectly in the configuration information. If the DLCI in the sense data is not the assigned one, reconfigure the 5494 and correct the DLCI parameter. If the DLCI is correct, continue with the next step.

2. For an existing or unchanged installation or configuration: There may be a temporary problem in the network. Call your network provider and report the problem. The 5494 continues attempts to connect to the network at 30 second intervals.

560410

Cause: (Frame Relay) A configured data link connection identifier (DLCI) has been reported as not active by the network. The 5494 attempts to contact the network using all DLCIs configured for hosts H1 - H4. The sense bytes xxxx identify which DLCI has been reported as not active.

Note: To obtain sense data, press the right arrow key on the 5494 keypad when this SRC is displayed.

CE Action: The DLCI may be inactive due to a temporary problem in the network. If the DLCI noted in the sense data is for a configured host other than the current one you are attempting to contact, ignore this message. The 5494 continues attempts to connect to the network on this DLCI, but you should obtain a sign-on screen through your connection.

If the DLCI noted is for the current AS/400 system you are attempting to contact, call your network service provider and report the interactive DLCI. The 5494 continues attempts to connect to the network at 30 second intervals.

| 570000

| **Cause:** (FR-TR Bridge) The bridge filter file is valid.

| CHKFILT has completed. The 5494FILT.DAT file has been verified and
| contains no errors.

| **CE Action:** None. This SRC is for your information only.

| 570001

| **Cause:** (FR-TR Bridge) The bridge filter file is invalid.

| The 5494FILT.DAT file has been verified and contains one or more
| errors.

| **CE Action:** If you are running CHKFILT, this program has completed.
| Other SRCs define the errors in the file. Correct the errors and
| rerun CHKFILT.

| If you receive this SRC on the 5494, the filter file is invalid.
| The bridge does not activate with an invalid filter file. Run the
| CHKFILT program on the 5494 Utility Program Diskette to check the
| 5494FILT.DAT file. This program will display additional error
| information. Correct the file and retry.

| 570013

| **Cause:** The 5494FILT.DAT file has a keyword that could not be found.
| The 5494 bridge does not activate with an invalid filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| 570015

| **Cause:** The 5494FILT.DAT file contains a keyword with an invalid
| parameter value. The 5494 bridge does not activate with an invalid
| filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| 570018

| **Cause:** The 5494FILT.DAT file contains a parameter that expected a
| numeric value. The 5494 bridge does not activate with an invalid
| filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| 570019

| **Cause:** The 5494FILT.DAT file contains a parameter that expected a
| string value. The 5494 bridge does not activate with an invalid
| filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| 570021

| **Cause:** The 5494FILT.DAT file contains a keyword with an invalid
| option. The 5494 bridge does not activate with an invalid filter
| file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| 570023

| **Cause:** The 5494FILT.DAT file contains a keyword with an invalid
| parameter value. The 5494 bridge does not activate with an invalid
| filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| 570025

| **Cause:** The 5494FILT.DAT file contains a keyword without enough
| parameters. There must be one parameter value for each port. The
| 5494 bridge does not activate with an invalid filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| 570029

| **Cause:** The 5494FILT.DAT file has a line that is in an invalid
| format. The 5494 bridge does not activate with an invalid filter
| file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| 570030

| **Cause:** The FR-TR Bridge initialized without a filter file. No
| filtering will be done on the 5494.

| **CE Action:** The 5494FILT.DAT file may be missing or consist only of
| comments.

1. | If the customer wants to operate the 5494 without a filter file,
| then this message is informational only and no action is
| required. Otherwise, continue with step 2.

2. | Make sure a 5494FILT.DAT file exists on the system diskette. If
| it does, use a PC editor to examine the file. Make sure it
| contains filtering data.

| **Note:** The default filter file that is provided on the 5494
| FR-TR Bridge System diskette contains only comments.

3. | Use the CHKFILT program from the 5494 Utility diskette to verify
| that a valid 5494FILT.DAT file exists on the system diskette.
| If invalid, correct the file and retry.

4. | If a problem continues to exist after taking the above steps,
| call 5494 support and report the SRC.

| **570041**

| **Cause:** The 5494FILT.DAT file contains an illegal character. The
| 5494 bridge does not activate with an invalid filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| **570042**

| **Cause:** The 5494FILT.DAT file contains a line with numeric
| characters but no keyword. The 5494 bridge does not activate with
| an invalid filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| **570043**

| **Cause:** The 5494FILT.DAT file contains a line with commas that
| should not be present. The 5494 bridge does not activate with an
| invalid filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| **570044**

| **Cause:** The 5494FILT.DAT file contains a line with a name for a
| criterion or criteria list but the module is empty. The 5494 bridge
| does not activate with an invalid filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| **570049**

| **Cause:** (FR-TR Bridge) The frame relay ring number configured in the
| 5494 does not match the ring number of the bridge partner. The 5494
| discards frames from this partner.

| The sense data includes:

- | bytes 1 and 2 = DLCI of bridge partner
- | bytes 3 and 4 = ring number of bridge partner

| **Note:** To obtain the sense data, press the right arrow(>) key on the
| 5494 keypad when this SRC is displayed.

| **CE Action:** The ring number of the 5494 and the bridge partner for
| the frame relay virtual LAN must be the same. Check the 5494
| configuration. Correct the frame relay virtual LAN ring number to
| match the ring number of the bridge partner. Retry.

| **570063**

| **Cause:** The 5494 FR-TR Bridge port for the token-ring or frame relay
| has failed. The byte of sense data indicates the port experiencing
| the problem.

- | One sense byte: 00 indicates token-ring port, 01 indicates frame
| relay port.

| **Note:** To obtain sense data, press the right arrow on the 5494
| keypad when this SRC is displayed.

| **CE Action:** Check the cabling to the token-ring or the frame relay
| network. Look for loose or defective cables. If the problem
| persists, run extended diagnostics and test all 5494 hardware.

| If extended diagnostics did not detect a problem, then call 5494
| support and report the SRC and sense data.

| **570066**

| **Cause:** The 5494 FR-TR Bridge encountered a problem when changing
| operational state.

| **CE Action:** The bridge could not start or stop operations due to an
| unforeseen condition. There may be a hardware problem. Run
| extended diagnostics and test all 5494 hardware.

| If extended diagnostics did not detect a problem, then call 5494
| support and report the SRC and sense data.

| **Note:** To obtain sense data, press the right arrow (ŷ) key on the
| 5494 keypad when this SRC is displayed.

- | Sense byte 1 = current state Sense byte 2 = return code
-

| **570071**

| **Cause:** (FR-TR Bridge) The 5494FILT.DAT file has too many levels of
| criteria lists. Only eight levels are permitted. The 5494 bridge
| does not activate with an invalid filter file.

| **CE Action:** Check the filter file to be sure that you have fewer
| than eight levels of criteria list. Correct the filter file and run
| the CHKFILT program from the 5494 Utility Program Diskette to verify
| your corrections. Copy the new filter file to the system diskette
| and retry.

| **570092**

| **Cause:** The 5494 FR-TR Bridge could not start operations.

| **CE Action:** Look in the time-stamped error log for other errors that
| preceded this error code. Take actions based on those error codes.

| **570097**

| **Cause:** (FR-TR Bridge) The 5494FILT.DAT file contains criteria
| lists that form a circular reference. The 5494 bridge does not
| activate with an invalid filter file.

| **CE Action:** Check the filter file. A criteria list contains
| sublists that ultimately include the original criteria list.
| Correct the filter file and run the CHKFILT program from the 5494
| Utility Program Diskette to verify your corrections. Copy the new
| filter file to the system diskette and retry.

| **570112**

| **Cause:** The FR-TR Bridge has experienced a SAP failure on the
| adapter and has closed the SAP. The sense data indicates the port.

- | One sense byte:
 - | 00 indicates token-ring port
 - | 01 indicates frame relay port.

| **Note:** To obtain sense data, press the right arrow (→) key on the
| 5494 keypad when this SRC is displayed.

| **CE Action:** This SRC is mostly informational. The bridge normally
| recovers from SAP failures. If the bridge fails to recover, call
| 5494 support and report the SRC and sense data.

| **570114**

| **Cause:** The 5494 FR-TR Bridge operation has failed on a specific
| port.

- | One sense byte: 00 indicates token-ring port, 01 indicates frame
| relay port.

| **Note:** To obtain sense data, press the right arrow on the 5494
| keypad when this SRC is displayed.

| **CE Action:** Look in the time-stamped error log for other errors that
| preceded this error code. Take actions based on those error codes.

| **570119**

| **Cause:** The 5494 is unable to initialize the FR-TR bridge. Two
| sense data bytes contain information for support personnel to
| determine the exact cause of the problem.

| **Note:** To obtain the sense data, press the right arrow(>) key on the
| 5494 keypad when this SRC is displayed.

| **CE Action:**

1. | Replace the 5494 FR-TR Bridge System Diskette with a backup 5494
| FR-TR Bridge System Diskette and retry.
2. | If using the backup system diskette results in the same error,
| contact 5494 support and report the SRC and sense data.

| **570125**

| **Cause:** The 5494FILT.DAT file contains a keyword with too many
| parameters. The 5494 bridge does not activate with an invalid
| filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| **570126**

| **Cause:** The 5494FILT.DAT file has a missing or misspelled keyword.
| The 5494 bridge does not activate with an invalid filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| 570128

| **Cause:** The 5494FILT.DAT file contains a keyword that is
| unrecognized or is incorrectly spelled. The 5494 bridge does not
| activate with an invalid filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| 570129

| **Cause:** The 5494FILT.DAT file contains a keyword with an invalid
| parameter. The 5494 bridge does not activate with an invalid filter
| file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| 570140

| **Cause:** The 5494FILT.DAT file contains a keyword with a name for a
| criterion or criteria list that is unknown, empty, or malformed.
| The 5494 bridge does not activate with an invalid filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| 570142

| **Cause:** The 5494 is unable to initialize the FR-TR bridge.

| **CE Action:**

1. | Replace the 5494 FR-TR Bridge System Diskette with a backup 5494
| FR-TR Bridge System Diskette and retry.

2. | If using the backup system diskette results in the same error,
| contact 5494 support and report this SRC.

| **570143**

| **Cause:** The 5494 is unable to initialize the FR-TR bridge. Two
| sense data bytes contain information for support personnel to
| determine the exact cause of the problem.

| **Note:** To obtain the sense data, press the right arrow (>) key on
| the 5494 keypad when this SRC is displayed.

| **CE Action:**

1. | Replace the 5494 FR-TR Bridge System Diskette with a backup 5494
| FR-TR Bridge System Diskette and retry.

 2. | If using the backup system diskette results in the same error,
| contact 5494 support and report the SRC and sense data.
-

| **570146**

| **Cause:** The 5494FILT.DAT file contains an entry with mutually
| dependent keywords, and some are missing.

- | If your criterion contains FrameData, it must also include
| FrameDataOffset

- | If your criterion contains SrcAddrMask or DestAddrMask, it must
| also include the corresponding SrcAddr or DestAddr.

| The 5494 bridge does not activate with an invalid filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| **570147**

| **Cause:** (FR-TR Bridge) The 5494FILT.DAT file contains too many
| definitions. The maximum number of definitions (of criterion or
| criteria lists) is 256. The 5494 bridge does not activate with an
| invalid filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| 570148

| Cause: The 5494 FR-TR Bridge interface has exhausted all its
| buffers.

| CE Action:

1. | This SRC is mostly informational. The bridge normally recovers
| from buffer shortages. If the bridge fails to recover, continue
| with step [2](#).
 2. | Replace the 5494 FR-TR Bridge System Diskette with a backup 5494
| FR-TR Bridge System Diskette and retry.
 3. | If using the backup system diskette results in the same error,
| contact 5494 support and report this SRC.
-

| 570149

| Cause: The 5494 FR-TR Bridge has detected the presence of another
| bridge between the same token-ring and frame relay virtual LANs with
| the same bridge number.

| CE Action: The bridge number of one of the bridges must be changed.
| To change the 5494 FR-TR Bridge number, enter configuration and
| change the bridge number to another value. Retry.

| 570151

| Cause: The 5494 FR-TR Bridge has experienced an adapter failure.

| Sense byte 1:

- | 00 = token-ring adapter
- | 01 = host twinaxial adapter (frame relay)

| Note: To obtain the sense data, press the right arrow (>) key on
| the 5494 keypad when this SRC is displayed.

| CE Action: The 5494 communications adapter may be defective. Run
| extended diagnostics and test all 5494 hardware. If extended

| diagnostics do not detect a problem, then call 5494 support and
| report the SRC and sense data.

| **570152**

| **Cause:** The 5494 FR-TR Bridge did not successfully open the adapter
| on a specified port.

| **CE Action:** Look at the sense data to determine the cause of the
| problem. The 5494 will retry the operation.

| **Note:** To obtain sense data, press the right arrow (>) key on the
| 5494 keypad when this SRC is displayed.

- | Sense byte 1 indicates the port:
 - | 00 token-ring port
 - | 01 frame relay port
- | Sense bytes 2-3 indicate the sense data. Values for the token
| ring port are:
 - | 1100 Lobe Media function failure
 - | 2600 Physical insertion Ring failure
 - | 2700 Physical insertion Ring Beaoning
 - | 2A00 Physical insertion Timeout
 - | 2D00 No monitor detected
 - | 3200 Address Verification Signal loss
 - | 3300 Unable to transmit
 - | 3500 Address Verification Timeout
 - | 3600 Address Verification Ring Failure
 - | 3700 Address Verification Ring Beaoning
 - | 3800 Address Verification Duplicate Node address
 - | 3A00 Address Verification Remove Received
 - | 4200 Ring Poll Signal Loss
 - | 4500 Ring Poll Timeout
 - | 4600 Ring Poll Ring Failure
 - | 4700 Ring Poll Beaoning
 - | 4A00 Ring Poll Remove Received
 - | 5500 Request Parameter Timeout
 - | 5600 Request Parameter Ring Failure
 - | 5700 Request Parameter Ring Beaoning
 - | 5900 Request Parameter Parameter Request
 - | 5A00 Request Parameter Remove Received

| Values of sense bytes 2-3 for the frame relay port are:

- | 3300 Unable to transmit

| **570153**

| **Cause:** The 5494 FR-TR Bridge has sent an 802.5 TEST frame from one port to the other and has not received a response.

| **CE Action:** Check the cabling for both ports. Make sure each network is operational. Correct any problems found and retry the operation.

| **570154**

| **Cause:** The 5494 FR-TR Bridge could not open the SAP. Sense data contains the return code from the operation.

| **CE Action:** Turn off and turn on the power to the 5494. If the problem reoccurs, run extended diagnostics and test all 5494 hardware.

| If extended diagnostics did not detect a problem, then call 5494 support and report the SRC and sense data.

| **Note:** To obtain sense data, press the right arrow on the 5494 keypad when this SRC is displayed.

- | Sense byte 1 = adapter:
 - | 00 = token-ring
 - | 01 = host twinaxial adapter (frame relay)
 - | Sense byte 2 = return code
-

| **570155**

| **Cause:** The 5494 FR-TR Bridge has experienced a SAP failure.

| **CE Action:** Call 5494 support and report the SRC and sense data.

| **Note:** To obtain sense data, press the right arrow on the 5494 keypad when this SRC is displayed.

- | Sense byte 1 = adapter:
 - | 00 = token-ring
 - | 01 = host twinaxial adapter (frame relay)

| **570156**

| **Cause:** The 5494 is experiencing congestion in the FR-TR bridge.
| Required resources are not available. The 5494 will retry the
| operation.

| **CE Action:** This message is a warning. If it occurs frequently, the
| customer should consider using a filter. If it occurs frequently
| and the system is not congested, contact 5494 support and report
| this SRC.

| **570157**

| **Cause:** The 5494FILT.DAT file contains a name for a criterion or
| criteria list that cannot be found. The 5494 bridge does not
| activate with an invalid filter file.

| **CE Action:** Additional information with this SRC identifies the line
| with the error. Correct the file and retry.

| **570161**

| **Cause:** The 5494 FR-TR bridge did not receive a BPDU before the
| message age timer expired.

- | One sense byte: 00 indicates token-ring port, 01 indicates frame
| relay port.

| **Note:** To obtain sense data, press the right arrow (→) key on the
| 5494 keypad when this SRC is displayed.

| **CE Action:** This message is a warning. No action is required.

| **570176**

| **Cause:** The 5494 is unable to initialize the FR-TR bridge.

| **CE Action:**

1. | Replace the 5494 FR-TR Bridge System Diskette with a backup 5494 | FR-TR Bridge System Diskette and retry.
 2. | If using the backup system diskette results in the same error, | contact 5494 support and report the SRC.
-

| **570184**

| **Cause:** (FR-TR Bridge) The 5494FILT.DAT file could not be loaded on | a port.

| **CE Action:** Look in the 5494 time-stamped error log for other errors | that preceded this error code. Take actions based on those error | codes.

| **570186**

| **Cause:** (FR-TR Bridge) Configuration problem.

| Something is wrong with the 5494 configuration for the FR-TR Bridge. | Check your configuration on the 5494 and make sure it matches your | network. Reconfigure, if necessary.

| **570193**

| **Cause:** The 5494FILT.DAT file contains a keyword that is not | supported by the 5494. The 5494 bridge does not activate with an | invalid filter file.

| **CE Action:** Additional information with this SRC identifies the line | with the error. Correct the file and retry.

| **570198**

| **Cause:** The FR-TR bridge has recovered from a buffer pool shortage. | This message is informational.

| **CE Action:** None.

E00xxx

Cause: These SRCs are recorded in the 5494 error log and indicate hardware failures in the 5494, where xxx is the 3-digit hardware SRC.

CE Action: Replace the FRU indicated by the 3-digit SRC that follows E00. These 3-digit SRCs begin in topic [3.2](#).

FFxxxxxxxxxx

Cause: 5494 code error detected during operation. If you are viewing this 12-digit SRC in the error log, the first 6 digits are in the SRC field, and the remaining 6 digits are in the sense data field.

FF

Software error classification

xxxxxxxxxxxx

Addressing information for the location of the failure.

CE Action: Call 5494 Support and report a code failure and this SRC.

****xxxxxxxxxx**

Cause: 5494 code error detected during operation. The 5494 reinitialized itself and resumed operations.

Software error caused reinitialization to occur

xxxxxxxxxxxx

Addressing information for the location of the failure.

CE Action: Call 5494 Support and report a code failure and this SRC.

4.0 Topic 4. 5494 Verification Procedures

Subtopics:

- [4.1 5494 Extended Diagnostics Flow](#)
 - [4.2 Running Extended Diagnostics \(Offline\)](#)
 - [4.3 Verifying 5494 Operation](#)
 - [4.4 Verifying the 5494 Configuration](#)
 - [4.5 Testing the DC Power Supply Voltage Level](#)
 - [4.6 Testing the DC Power Supply Ripple Level](#)
-

4.1 5494 Extended Diagnostics Flow

This topic contains the reference information you need to perform the procedures in Topic 2 and actions in Topic 3. Topics 2 and 3 refer you to a specific task in this topic, when necessary.

Attention!

Make sure that **all** sessions are logged off before you perform any of the following tasks:

- Run extended diagnostics.
- Turn the 5494 power **OFF (0)**.
- Disconnect any cable from the 5494.

Most of the procedures in this topic instruct you to use extended diagnostics to determine the 5494 problem. While extended diagnostics are being run, the 5494 is not communicating with the AS/400 system.

See [Figure 9](#). The instructions for running extended diagnostics follow in topic [4.2](#).

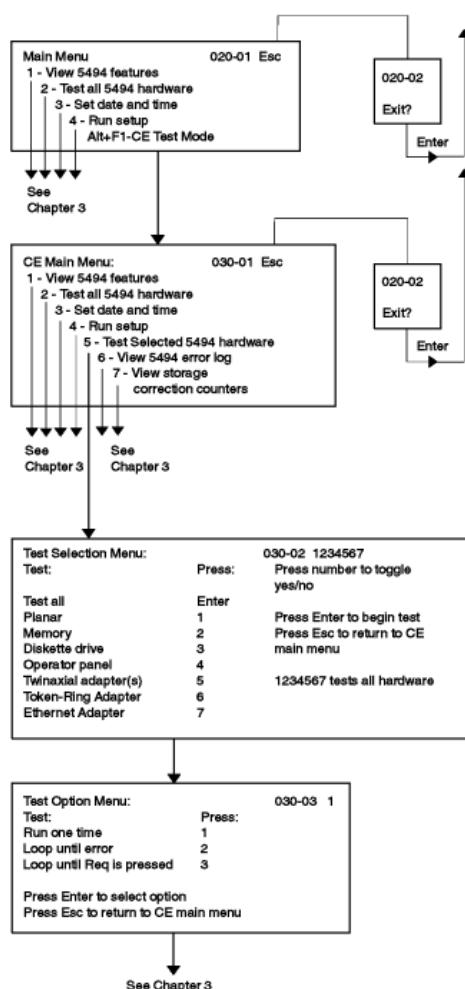


Figure 9. Extended Diagnostics Flow Chart

4.2 Running Extended Diagnostics (Offline)

1. Turn the 5494 power **OFF (0)**.
2. Remove the system diskette from the diskette drive.
3. Because extended diagnostics automatically perform a cable wrap test on the cables that connect the 5494 to the modem or DCE and to a LAN (Token-Ring or Ethernet network), it is important that these cables, if present, are connected correctly before beginning extended diagnostics.
 - o For external communications cable (modem or DCE connection), the cable must be connected to the 5494 but does not need to be connected to the modem or DCE. The diagnostics will automatically perform the cable wrap test.
 - o For Token-Ring connections using:
 - IBM Cabling System data connectors, the cable must be connected to the 5494 and disconnected from the LAN.
 - Any other type of cabling connectors, disconnect the cable from the Token-Ring adapter and connect the wrap plug, provided with the cable, to the Token-Ring adapter.
 - o For Ethernet connections using:
 - 10BASE2 or 10BASE5, the 5494 should be connected to the LAN or to a wrap plug. If this is not possible, answer "no" to the panel that asks if the 5494 is connected to the LAN. This will prevent the wrap test from being performed.
 - 10BASE-T, no wrap test is performed and no LAN connection is necessary. If the 5494 is connected to the LAN, it may be left connected.

Note: Make sure that the extended diagnostic test for the Ethernet adapter is started from the CE main menu.

4. Turn the 5494 power **ON (1)**. Wait approximately 1 minute while the POST is running.

5. When the message code 003-02 is displayed on the LCD, to begin extended diagnostics:

- a. Insert the system diskette.
- b. Pull the keypad out of the 5494.
- c. Type **0**.
- d. Press **Enter**.

Note: If any other message code is displayed on the LCD, look up the message code in ["Message Codes" in topic 3.1](#) to determine the next action.

6. When the message code 020-01 is displayed, press and hold **Alt** and press **PF1** to access the CE main menu (030-01).

Note: If the 5494 has an Ethernet adapter and you are running "Test All 5494 Hardware", run the test **only** from the CE Main Menu (030-01). When running from the Main Menu (020-01), false errors may occur that indicate the Ethernet adapter is defective when it is not.

7. Find the function you wish to access in the following table and follow the appropriate steps. The functions described are:

- 1 View 5494 features, in topic [4.2](#).
- 2 Test all 5494 hardware, in topic [4.2](#).
- 3 Verify or set date and time, in topic [4.2](#).
- 4 Run setup to verify or set the Token-Ring speed, in topic [4.2](#), or to verify or select Ethernet media type, in topic [4.2](#).
- 5 Test selected 5494 hardware, in topic [4.2](#).
- 6 View the 5494 error log, in topic [4.2](#).

8. Press **Esc** to exit the extended diagnostics and restart the 5494.

See [Figure 9 in topic 4.1](#) if you have questions about the flow of extended diagnostics.

Procedure	Action
View 5494 features	<ol style="list-style-type: none">1. Press Enter to display the adapters and amount of storage installed in the 5494.2. The feature information is identified by message codes displayed on the left-hand side of the LCD. Use the up and down arrows to scroll through the feature information. See "Message Codes" in topic 3.1 to determine the meaning of the message codes displayed while viewing the 5494 features. Press Esc to exit this information.
Test all 5494 hardware	<ol style="list-style-type: none">1. Type 2 and press Enter.2. Message codes such as 031-01, 032-01, and 033-01 will be displayed as the tests are run. Manual intervention (for example, removing the diskette from the diskette drive) will be required for some tests. A message code will be displayed to indicate the action that is required.3. If no problem is found, message code 030-04 will be displayed. Press Esc until message code 030-01 is displayed, and then see "View the 5494 error log" in topic 4.2. If any other message code is displayed, see "Message Codes" in topic 3.1.
Verify or set date and time	<p>The following steps explain how to set the date and time using extended diagnostics.</p> <p>You can also use concurrent mode to set the date and time. See "Setting 5494 Date" in topic 6.2.14 and "Setting 5494 Time" in topic 6.2.15 for instructions.</p> <ol style="list-style-type: none">1. Press 3 and Enter to access the set date and time function.2. When the message code 023-01 is displayed, change the current date. To change the current date:<ul style="list-style-type: none">° Use the left and right arrows to move the cursor.° Use the numbers to enter the new values, or press Enter if the existing values are correct.° Press Enter to save the new values or Esc to quit without changing. <p>The valid ranges:</p> <p>For year:</p> <p>91-99 for the years 1991-1999 00-50 for the years 2000-2050.</p> <p>For month: 01-12.</p>

	<p>For day:</p> <p>01-29 for February (29 is valid during leap year only) 01-30 for months with 30 days 01-31 for months with 31 days.</p> <p>3. When the message code 023-02 is displayed, change the current time. To change the current time:</p> <ul style="list-style-type: none"> ° Use the left and right arrows to move the cursor. ° Use the numbers to enter the new values, or press Enter if the existing values are correct. ° Press Enter to save the new values or Esc to quit without changing. <p>The valid ranges are:</p> <p>For hour: 00-23 For minutes: 00-59 For seconds: 00-59.</p>
Run setup and verify or set Token-Ring speed	<p>When you run setup, the internal descriptions of the adapters installed in the 5494 are initialized. If the 5494 has a Token-Ring adapter installed, setup can be used to change the Token-Ring speed.</p> <p>Before running setup, see the configuration worksheets or ask the customer to provide you with the current Token-Ring speed. (see "Displaying 5494 Configuration Information" in topic 6.2.2).</p> <ol style="list-style-type: none"> 1. Press 4 and Enter to access the setup function. 2. Message code 024-01 will display, indicating that the current data rate is displayed. If the data rate displayed is correct, press Enter. If not, press the up or down arrow and Enter to change the rate. 3. Press Enter to return to the CE main menu when the message code 024-02 is displayed.
Run setup and verify or select Ethernet media type	<p>When you run setup, the internal descriptions of the adapters installed in the 5494 are initialized. If the 5494 has an Ethernet adapter installed, setup can be used to select or change the Ethernet media type.</p> <p>Before running setup, see the configuration worksheets or ask the customer to provide you with the current Ethernet media type (see "Displaying 5494 Configuration Information" in topic 6.2.2).</p> <ol style="list-style-type: none"> 1. Press 4 and Enter to access the setup function. 2. Message code 024-04 will display, indicating that the current media type is displayed. If the media type displayed is correct, press Enter. If not, press the up or down arrow and Enter to change the media type. 3. Press Enter to return to the CE main menu when the message code 024-02 is displayed.
Test selected 5494 hardware	<ol style="list-style-type: none"> 1. Press 5 and Enter. 2. Message code 030-02 is displayed on the left-hand side of the LCD and 12345 is displayed on the right-hand side. If the 5494 contains a Token-Ring adapter, 123456 is displayed; if the 5494 contains an Ethernet adapter, 12345 7 is displayed. Note: The Token-Ring adapter and Ethernet adapter cannot be installed together in a 5494. See "Message Codes" in topic 3.1 to determine the next action. 3. If no problem is found, message code 030-04 will be displayed. Press Esc to return to the CE main menu, and then see "View the 5494 Error Log" in topic 4.2 and display the 5494 error log. If any other message code is displayed, see "Message Codes" in topic 3.1 to determine the meaning of message codes displayed while testing the 5494 hardware. Press Esc to exit this information and return to the CE main menu.
View the 5494 error log	<p>This procedure describes how to view the 5494 error log offline using extended diagnostics. Use this procedure if the 5494 is not currently operational.</p> <p>If the 5494 is currently operational (the Ready LED is lit), see "Displaying the 5494 Error Log" in topic 6.2.4 for instructions.</p> <ol style="list-style-type: none"> 1. Press 6 and Enter to view the 5494 error log. 2. See "How to View the Error Log from Extended Diagnostics" in topic 3.1.1 for further instructions.

4.3 Verifying 5494 Operation

To verify 5494 operation:

1. First, see "[5494 Normal Power-On Sequence](#)" in topic [4.3.1](#) to determine if the internal hardware of the 5494 is operating correctly.
2. Then, after verifying normal power-on, refer to the *IBM 5494 Remote Control Unit User's Guide* to establish the link to the AS/400 system.
3. Finally, see "[Verifying Workstation Connection](#)" in topic [4.3.2](#) to verify that all connected and powered-on workstations are communicating with the AS/400 system.

Subtopics:

- [4.3.1 5494 Normal Power-On Sequence](#)
 - [4.3.2 Verifying Workstation Connection](#)
-

4.3.1 5494 Normal Power-On Sequence

During the power-on sequence, the code tests all major parts of the 5494 and loads the operational code from the system diskette.

The following information describes how the 5494 should function during normal power-on. This description assumes that the 5494 configuration was checked and is correct. See "[Verifying the 5494 Configuration](#)" in topic [4.4](#), if necessary.

1. Make sure that the 5494 system diskette is in the diskette drive.
 2. Turn the 5494 power **OFF (0)** and then back **ON (1)**.
 3. Verify the following:
 - a. All LEDs come on for 1 second and go off for 1 second, and then only the Test Mode LED comes on.
 - b. The message code 001-01 is displayed on the left-hand side of the LCD, indicating that the 5494 is performing a test of all its internal components.
- During this test, a flashing asterisk is displayed on the right-hand side of the LCD. This testing of internal components normally takes about 1 minute, and is followed by an IPL of the 5494 operational code that is on the system diskette. The IPL takes about 20 seconds.
- Note:** If the system diskette is not in the diskette drive, the message code 003-02, indicating that the diskette must be in the diskette drive, will be displayed. If this message is displayed, insert the system diskette and press **Enter** to continue.
- c. The current date and time as determined by the internal clock are displayed next.

- d. The Test Mode LED goes off. The operational code initializes.
 - e. The Ready LED is turned on indicating that initialization is complete and the 5494 is ready to establish communication with the AS/400 system.
 - f. On all 5250 workstations, a System Available indicator appears. The cursor will move from the upper right-hand side of the screen to the upper left-hand side. Each NWS will be in free-key mode (see ["Free-Key Mode" in topic B.2](#) for details).
-

4.3.2 Verifying Workstation Connection

This section describes how to determine if your workstation is attached correctly through a 5250 or LAN connection.

Subtopics:

- [4.3.2.1 Before You Begin Verification](#)
 - [4.3.2.2 5250 Connection](#)
 - [4.3.2.3 LAN \(Token-Ring or Ethernet\) Connection](#)
-

4.3.2.1 Before You Begin Verification

Before you begin verification, go to the operator panel and perform the following steps:

1. Make sure that the 5494 power push button is set to **ON** and the Ready LED is lit.
2. Make sure that all workstations for which you want to verify the connection are on.
3. If you want to verify one or more PWSs, go to step [4](#).

If not, see ["5250 Connection" in topic 4.3.2.2](#).

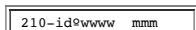
4. Establish a link to your AS/400 system. For instructions on link establishment, see ["How to Start Communication with the AS/400 System" in topic B.1.1](#).
 5. For PWSs, have the customer attempt to communicate with the AS/400 system. Wait for an appropriate message that the PWS is attempting communications such as a logon message or "WAITING FOR ADAPTER TO OPEN" message.
-

4.3.2.2 5250 Connection

To verify a workstation connection using the 5250 connection, do the following:

1. Press **Req**, type **210** on the keypad, and then press **Enter**.

One LCD panel is displayed for each workstation that is communicating with the 5494 using the 5250 connection. The LCD displays the port and station address in the following format:



210-id@www mmm

where:

id

is the port and station address.

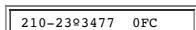
www

is the device type.

mmm

is the model.

An example is:



210-2393477 0FC

This panel shows that this workstation is on port 2, station 3, and is a 3477 Model 0FC.

Note: The device type is obtained from the workstation or printer. Printers return a group designation and the device type displayed may not be the actual printer device type but rather another printer device type that has the same capabilities.

2. Use the **down arrow** to scroll to a preceding entry and the **up arrow** to scroll to a following entry.

Note: If 210***** is displayed, you have reached the end of the list of 5250 workstations or, if it is the only panel, no 5250 workstations are in contact with the 5494.

To refresh the LCD display with current information, press **Req**, type **210**, and then press **Enter**. When you finish viewing the LCD display, press **Esc** to clear the panel. Error messages are not displayed while requested information is on the LCD panel.

4.3.2.3 LAN (Token-Ring or Ethernet) Connection

To verify a workstation connection using the LAN connection, do the following:

1. Press **Req**, type **211**, and then press **Enter**.

One LCD panel is displayed for each workstation that is communicating with the 5494 using the LAN connection. The LCD displays the LAN address of the workstation in the following format:

2119aaaaaaaaaa

where *aaaaaaaaaaaa* is the LAN address.

Note: If 2119***** is displayed, you have reached the end of the list of LAN workstations or, if it is the only panel, no LAN workstations are in contact with the 5494.

2. Use the **down arrow** to scroll to a preceding entry and the **up arrow** to scroll to a following entry.

To refresh the LCD display with current information, press **Req**, type **211**, and then press **Enter**. When you finish viewing the LCD display, press **Esc** to clear the LCD. Error messages are not displayed while requested information is on the LCD.

4.4 Verifying the 5494 Configuration

To verify the 5494 configuration, perform the following steps:

1. Get a copy of the customer's 5494 configuration worksheets.
2. See [Topic 6, "Concurrent Mode from the Operator Panel or Utility Program."](#) and compare the 5494 configuration information to the configuration worksheets.
3. If you find differences in the configuration and the configuration worksheets, have the customer determine which is correct.
4. If the configuration is incorrect, refer to the *IBM 5494 Remote Control Unit User's Guide* and work with the customer to correct the configuration.

4.5 Testing the DC Power Supply Voltage Level

Use the following procedure to check voltage levels on the power supply:

DANGER

Line voltage is always present at the power supply when the ac line voltage LED is on. Disconnect the power cord from the customer's ac supply before disassembling the 5494 power supply.

DANGER

Do not connect ac voltage to the power supply when it is removed from the control unit. Severe electrical shock could result. Safe grounding of the power supply is ensured only when the power supply is securely fastened in the control unit.

Note: For translations of these safety notices, see [Appendix A, "Safety Notices."](#)

Attention: Remove the diskette from the 5494 before doing this procedure. Reinsert the diskette after the voltage problem is corrected.

1. Turn the 5494 power **OFF (0)** and remove the cover. See "[Cover Removal and Replacement](#)" in topic [5.7.1](#).
2. Set the multimeter for resistance measurements and measure from the planar ground to the chassis ground. If this resistance is 0.1 ohm or less, make sure that the planar grounding screws are secure.
3. Reconnect the power cord.
4. Turn the 5494 power **ON (I)** and wait about 5 minutes before you do the next step.
5. Set the multimeter for dc voltage measurements and probe the power test points on the planar indicated in [Table 10](#).

You may need to pull the connector slightly away from the pins so that you can access the test points. The power good signal has an internal pull-up resistor.

Table 10. DC Power Supply Voltage Level Check		
Probe Points	Pin Number	Voltage Level
+ 5 to chassis ground	3, 4, 5, 6, 7, 8 on P17	+ 5 (4.82 to 5.25) Vdc
+ 12 to chassis ground	1, 2 on P17	+ 12 (11.52 to 12.60) Vdc
- 12 to chassis ground	9 on P16	- 12 (-10.92 to -13.20) Vdc

4.6 Testing the DC Power Supply Ripple Level

The peak-to-peak output ripple should be less than 4% of the respective dc voltages when measured with an oscilloscope. Use the values in the "Volts Peak-to-Peak" column of [Table 11](#).

When an oscilloscope is not available, you can observe the ripple voltage by using the 8060 A/AA digital multimeter as follows:

1. Set the ac/dc switch to ac.
2. Set the range switch to 200 mv.
3. Set the correct switch combination for V/db measurements.
4. Connect one of the meter leads to the chassis ground and the other lead to the appropriate planar test point.

5. Read the measured value on the multimeter. If the OL symbol appears on the multimeter display, the input is higher than the range selected. Select a higher range for measurement.

6. Use the values in the "Volts RMS" column of [Table 11](#) to determine if you have an acceptable value.

Table 11. Ripple Level Check		
Power Supply Voltage	Acceptable Ripple Level (Volts Peak-to-Peak)	Acceptable Ripple Level (Volts RMS)
+ 12 Vdc	Less than 80 mv	Less than 28 mv
+ 5 Vdc	Less than 50 mv	Less than 18 mv
- 12 Vdc	Less than 100 mv	Less than 35 mv

5.0 Topic 5. Removal and Replacement Procedures

Subtopics:

- [5.1 Information About Removal and Replacement](#)
- [5.2 Locations](#)
- [5.3 Grounds](#)
- [5.4 AC Power Distribution](#)
- [5.5 DC Power Distribution](#)
- [5.6 5494 Pin Assignments](#)
- [5.7 5494 FRU Removal and Replacement Procedures](#)

5.1 Information About Removal and Replacement

This section tells you how to remove and replace field replaceable units (FRUs) in the 5494.

DANGER

Never work on equipment, or connect or disconnect signal cables during periods of lightning activity.

CAUTION:

Before removing any FRU, set the power OFF at the control unit, unplug all power cords from electrical outlets, and disconnect any interconnecting cables.

Note: For translations of this safety notice, see [Appendix A, "Safety Notices."](#)

Remove the 5494 system diskette from the diskette drive before beginning any removal and replacement procedures.

The arrows in the removal and replacement procedures show the direction of movement to remove a FRU, turn a screw, or to press a tab to release the FRU. The arrows are marked in numeric order to show the correct sequence of removal.

When other FRUs must be removed prior to removing the failing FRU, they are listed at the beginning of the procedure. Go to the removal procedure for each FRU listed, remove the FRU, and then continue with the removal of the failing FRU.

To replace a FRU, reverse the removal procedure and follow any notes that pertain to replacement. See "[Locations](#)" in topic [5.2](#) for internal cable connection and arrangement information.

The planar, adapters, SIMM, and host-twinaxial adapter are sensitive to, and can be damaged by, electrostatic discharge. Establish personal grounding by touching a ground point with one hand before touching these units.

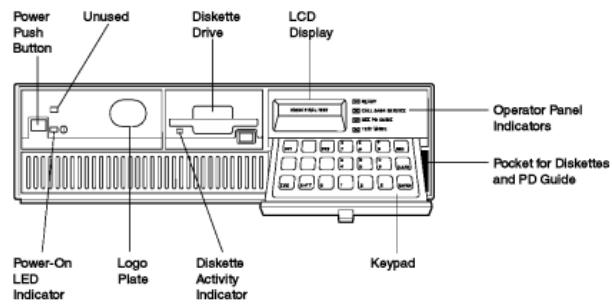
Attention: An electrostatic discharge (ESD) kit (IBM P/N 6428316) and wrist strap (IBM P/N 6405959) must be used to establish personal grounding whenever you handle electrostatic discharge-sensitive FRUs.

5.2 Locations

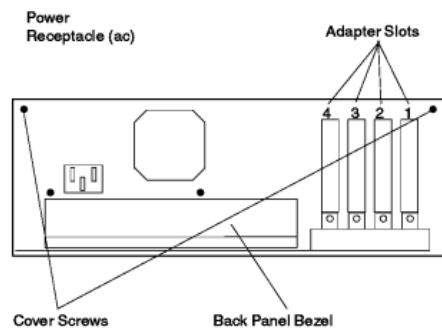
Subtopics:

- [5.2.1 Front View of the 5494](#)
- [5.2.2 Back View of the 5494](#)
- [5.2.3 Interior View of the 5494](#)
- [5.2.4 Internal Cables](#)
- [5.2.5 Planar](#)

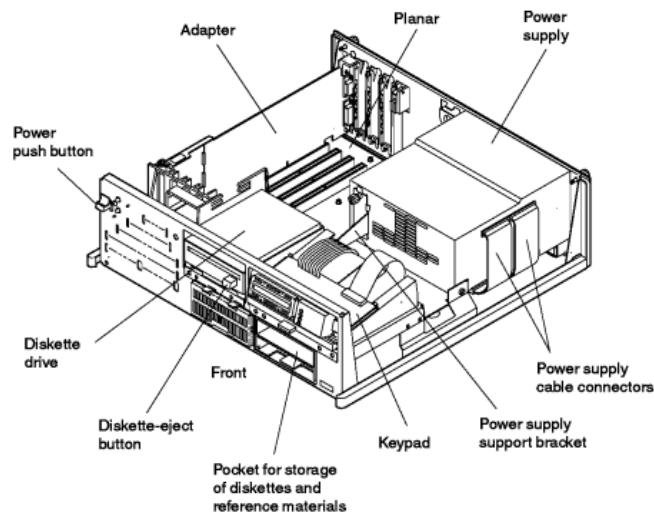
5.2.1 Front View of the 5494



5.2.2 Back View of the 5494

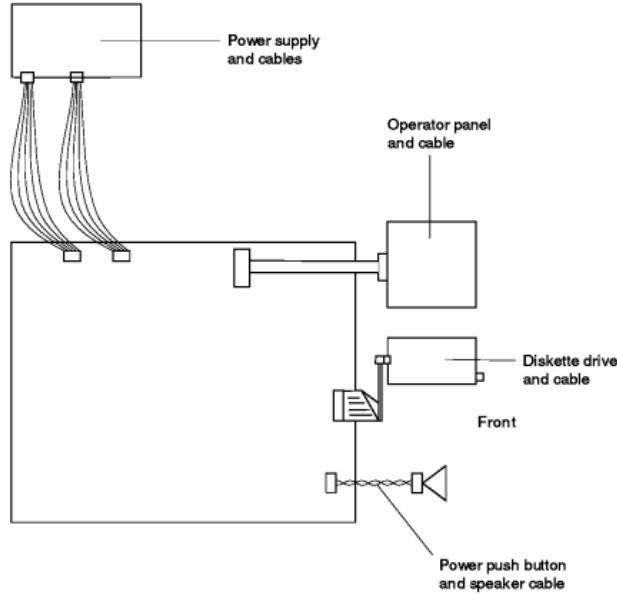


5.2.3 Interior View of the 5494

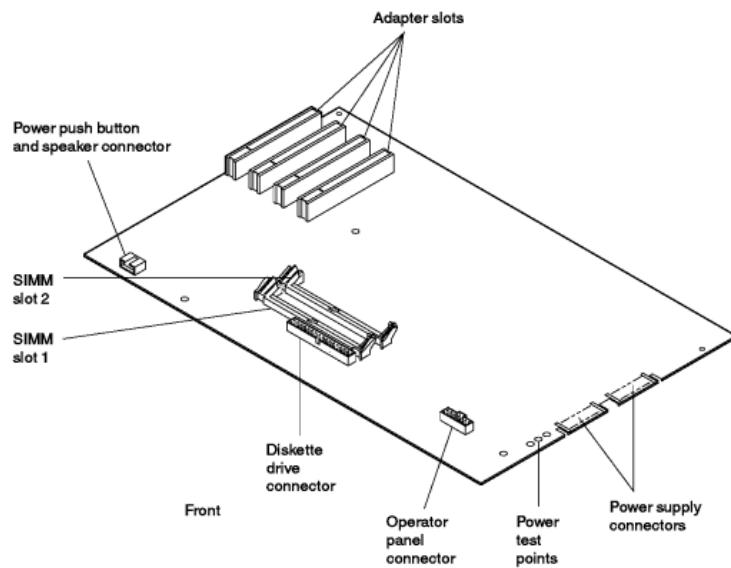


5.2.4 Internal Cables

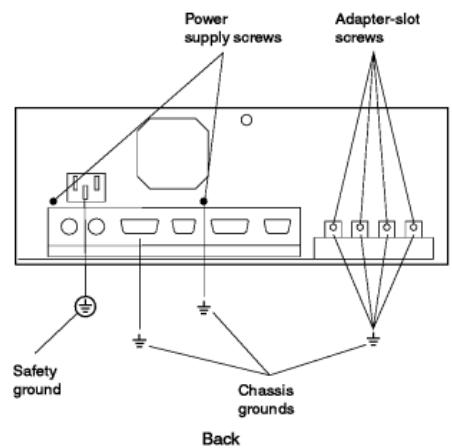
This diagram shows the arrangement of the cables that connect the components of the 5494.



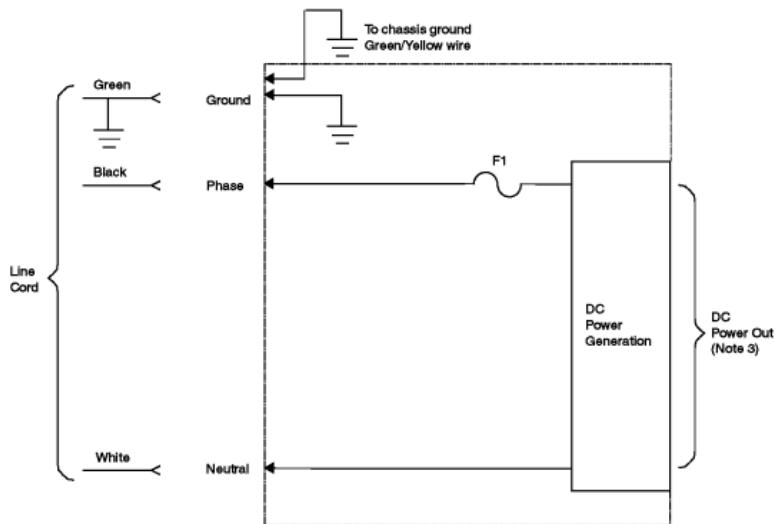
5.2.5 Planar



5.3 Grounds



5.4 AC Power Distribution



Notes:

1. The power supply FRU contains all parts within the dashed lines.
2. Fuse F1 is hard soldered and not field-replaceable.
3. See 5494 DC power distribution figure.

Figure 10. AC Power Distribution

Table 12. 5494 AC Voltage Requirements		
Power Characteristics	Low Voltage	High Voltage
Volts ac (limits)	90-139 VRMS	180-265 VRMS
Volts ac (nominal range)	100-127 VRMS	200-240 VRMS
Frequency (single phase)	50/60 Hz	50/60 Hz
Current (maximum steady state)	2.5 amps @ 50/60 Hz	1.6 amps @ 50/60 Hz
Power consumption	131 watts	131 watts

5.5 DC Power Distribution

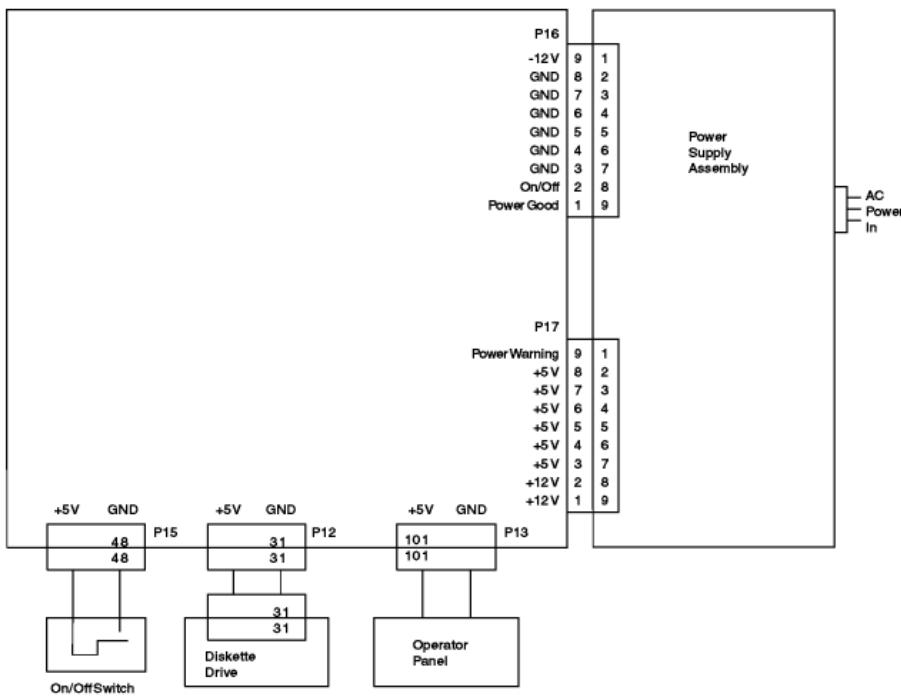
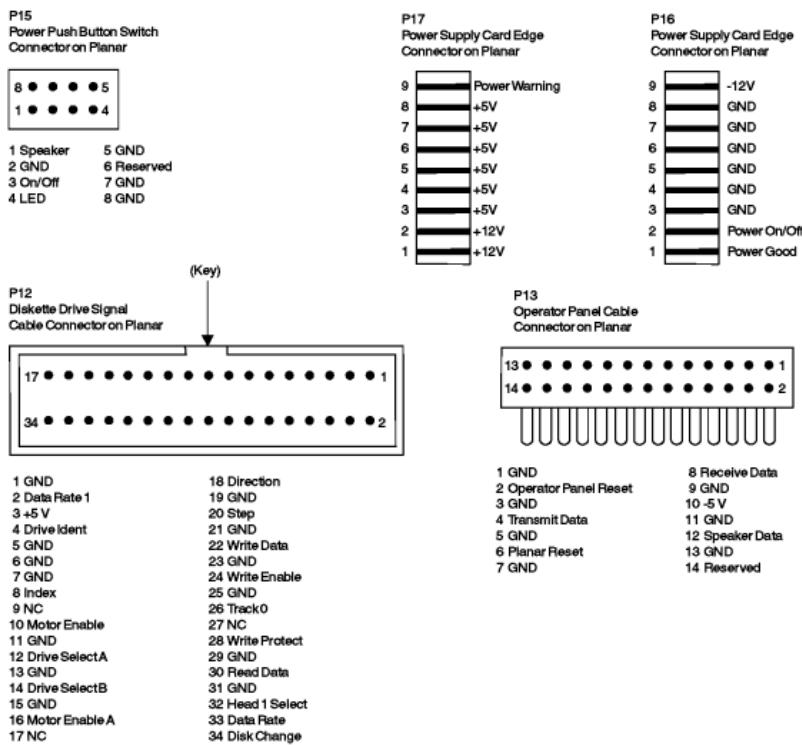


Figure 11. DC Power Distribution

5.6 5494 Pin Assignments



5.7 5494 FRU Removal and Replacement Procedures

Subtopics:

- [5.7.1 Cover Removal and Replacement](#)
 - [5.7.2 Twinaxial Adapter and Twinaxial Expansion Adapter Removal and Replacement](#)
 - [5.7.3 Token-Ring Adapter Removal and Replacement](#)
 - [5.7.4 Ethernet Adapter Removal and Replacement](#)
 - [5.7.5 Power Push Button and Speaker Assembly Removal and Replacement](#)
 - [5.7.6 Diskette Drive Removal and Replacement](#)
 - [5.7.7 Operator Panel Removal and Replacement](#)
 - [5.7.8 SIMM Removal and Replacement](#)
 - [5.7.9 Power Supply Removal and Replacement](#)
 - [5.7.10 Planar Removal and Replacement](#)
-

5.7.1 Cover Removal and Replacement

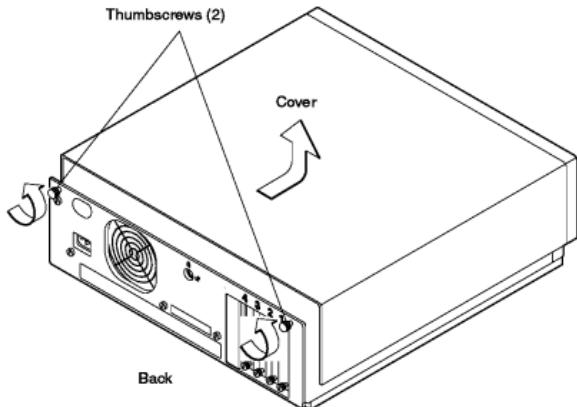
CAUTION:

Before removing any FRU, switch the power OFF at the control unit, unplug all power cords from electrical outlets, and disconnect any interconnecting cables.

Note: Notice the adapters to which the cables are connected.

Attention: Before removing the cover, remove the diskette from the diskette drive.

1. Make sure that the keypad on the front of the 5494 is inside the 5494.
2. Loosen the 2 thumbscrews on the back panel.
3. Remove the cover by sliding it forward approximately 50 mm (2 in.), and then lifting it.
4. Reverse the procedure to replace the cover.
5. After you have completed the removal and replacement procedures, go to "[Running Extended Diagnostics \(Offline\)](#)" in topic [4.2](#) and test all 5494 hardware.

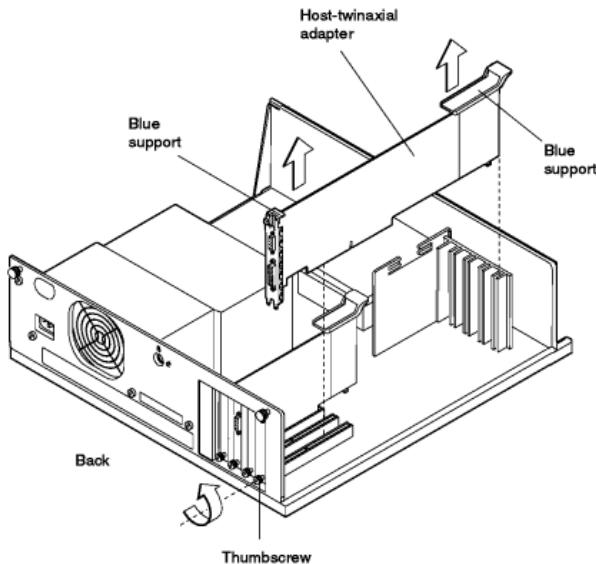


5.7.2 Twinaxial Adapter and Twinaxial Expansion Adapter Removal and Replacement

Attention: The Twinaxial adapter and the Twinaxial Expansion Adapter are sensitive to electrostatic discharge. Be sure to use an electrostatic discharge (ESD) kit and wrist strap while performing this procedure.

Note: The Twinaxial Adapter located in the lower slot number supports ports 0--3.

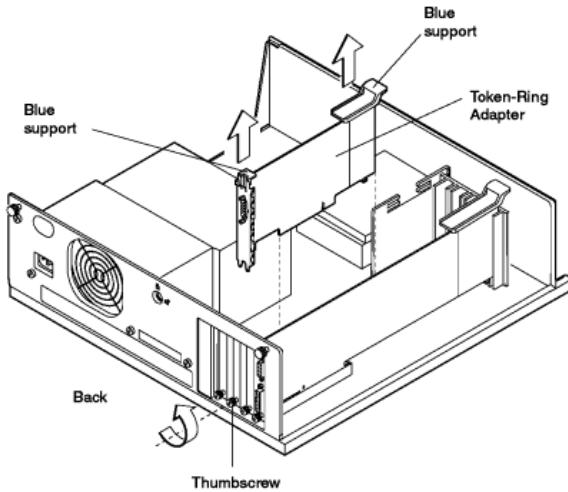
1. Remove the cover (see ["Cover Removal and Replacement" in topic 5.7.1](#)).
2. Loosen the external thumbscrew.
3. Hold the 2 blue supports to lift the host-twinaxial adapter up and out of the adapter slot.
4. Reverse the procedure to replace the host-twinaxial adapter.
5. When a Twinaxial Expansion Adapter is installed, repeat this procedure.
6. After you have completed the removal and replacement procedures, go to ["Running Extended Diagnostics \(Offline\)" in topic 4.2](#) and test all 5494 hardware.



5.7.3 Token-Ring Adapter Removal and Replacement

Attention: The Token-Ring adapter is sensitive to electrostatic discharge. Be sure to use an ESD kit and wrist strap while performing this procedure.

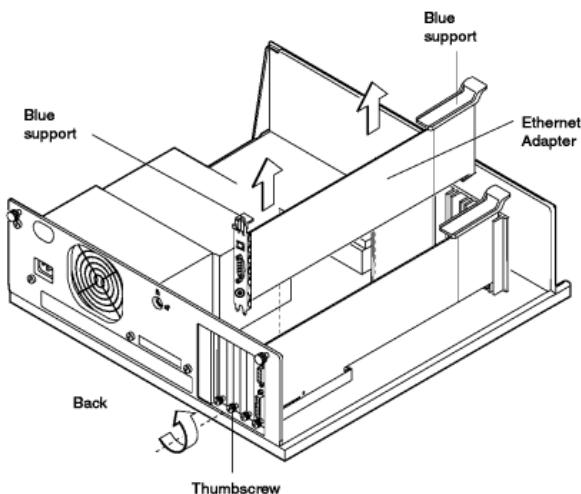
1. Remove the cover (see "[Cover Removal and Replacement](#)" in topic 5.7.1).
2. Loosen the external thumbscrew.
3. Hold the 2 blue supports to lift the Token-Ring adapter up and out of the 5494.
4. Reverse the procedure to replace the Token-Ring adapter.
5. After you have completed the removal and replacement procedures, go to "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2 and test all 5494 hardware.



5.7.4 Ethernet Adapter Removal and Replacement

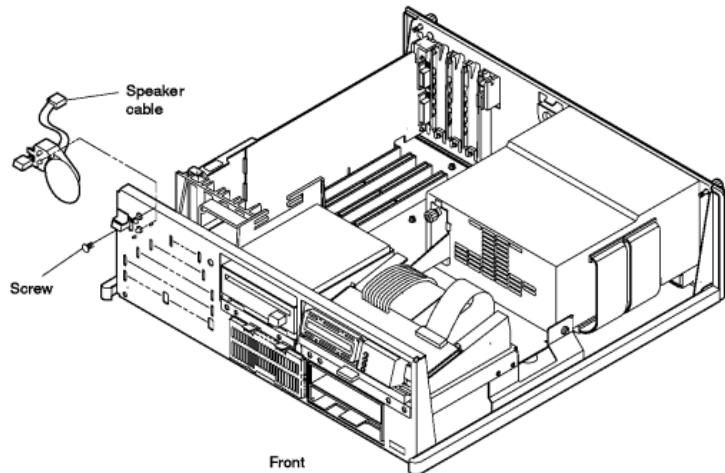
Attention: The Ethernet adapter is sensitive to electrostatic discharge. Be sure to use an ESD kit and wrist strap while performing this procedure.

1. Remove the cover (see ["Cover Removal and Replacement" in topic 5.7.1](#)).
 2. Loosen the external thumbscrew.
 3. Hold the 2 blue supports to lift the Ethernet adapter up and out of the 5494.
 4. Reverse the procedure to replace the Ethernet adapter.
5. After you have completed the removal and replacement procedures, go to ["Running Extended Diagnostics \(Offline\)" in topic 4.2](#) and test all 5494 hardware.



5.7.5 Power Push Button and Speaker Assembly Removal and Replacement

1. Remove the cover (see ["Cover Removal and Replacement" in topic 5.7.1](#)).
2. Disconnect the speaker cable from the planar (see ["Internal Cables" in topic 5.2.4](#)). Notice the slot through which the cable connects to the planar.
3. While holding the assembly, remove the screw.
4. Lift the assembly out of the 5494.
5. Reverse the procedure to replace the power push button and speaker assembly.
6. After you have completed the removal and replacement procedures, go to ["Running Extended Diagnostics \(Offline\)" in topic 4.2](#) and test all 5494 hardware.

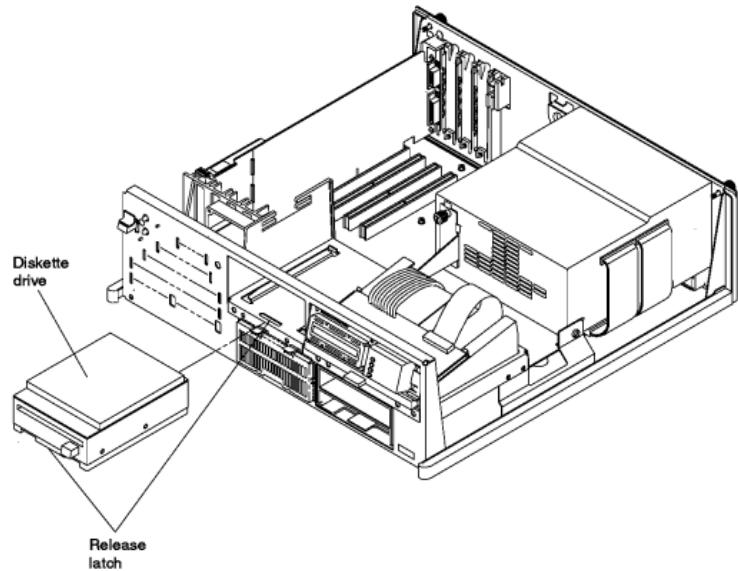


5.7.6 Diskette Drive Removal and Replacement

Note: You must install only diskette drives designed for this system. Use of diskette drives not designed for this system could cause intermittent problems.

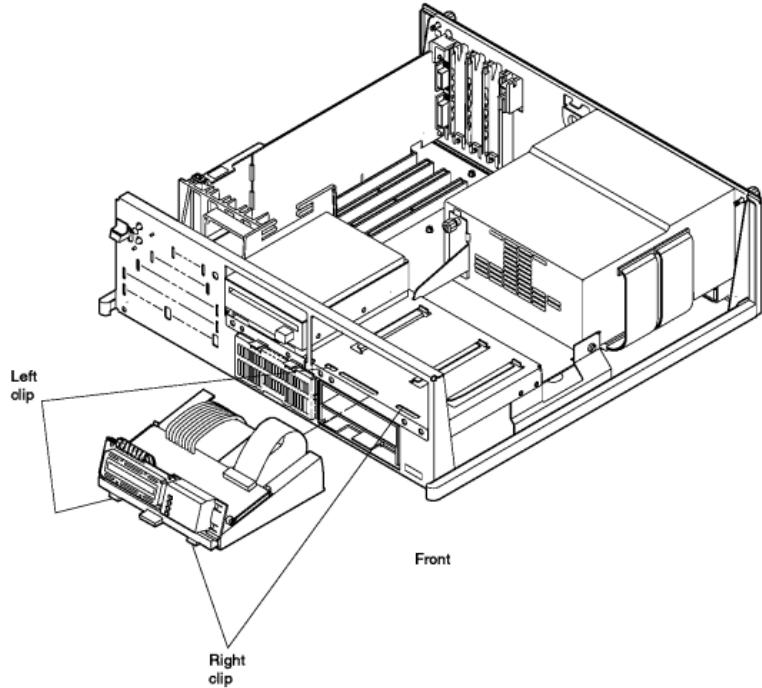
1. Remove the cover (see ["Cover Removal and Replacement" in topic 5.7.1](#)).
2. Disconnect the diskette drive cable from the planar (see ["Internal Cables" in topic 5.2.4](#)).
3. Remove the diskette drive by lifting up and holding the release latch while sliding the diskette drive out.

4. Reverse the procedure to replace the diskette drive.
5. After you have completed the removal and replacement procedures, go to "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2 and test all 5494 hardware.



5.7.7 Operator Panel Removal and Replacement

1. Remove the cover (see "[Cover Removal and Replacement](#)" in topic 5.7.1).
2. Disconnect the cable attached to the planar (see "[Internal Cables](#)" in topic 5.2.4).
3. Two clips must be disengaged to remove the operator panel. Place the blade of a screwdriver under the panel to disengage the left clip and pry up gently; at the same time, with your thumb under the panel, pull the left side forward slightly to keep the clip from re-engaging.
4. Repeat step 3 for the right clip, and push the panel out through the front of the 5494.
5. Reverse the procedure to replace the operator panel. Be sure that the replacement operator panel includes the correct keypad overlay.
6. After you have completed the removal and replacement procedures, go to "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2 and test all 5494 hardware.

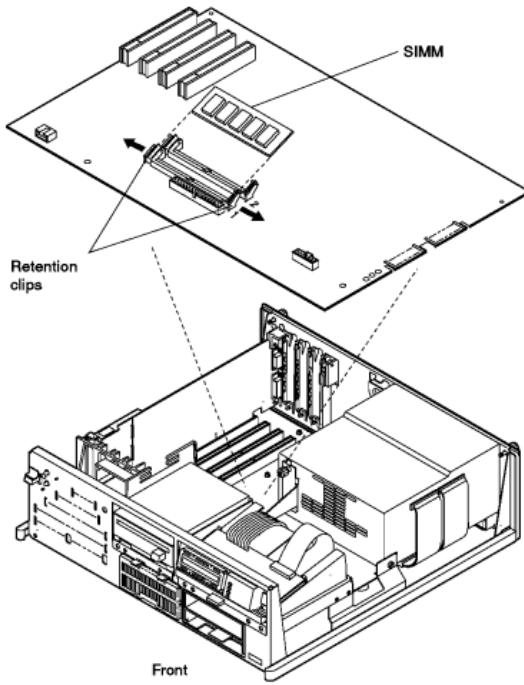


5.7.8 SIMM Removal and Replacement

1. Remove the cover (see ["Cover Removal and Replacement" in topic 5.7.1](#)).
2. With your fingertips, push the retention clips away from the SIMM.
3. | Lift the failing SIMM out of the slot.
4. Reverse the procedure to replace the SIMM.

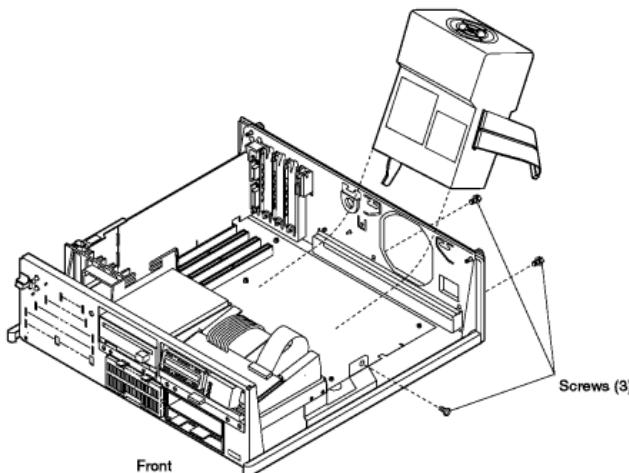
| **Attention:** If there is only one SIMM installed, be sure to install the replacement SIMM in **slot 1**.

5. After you have completed the removal and replacement procedures, go to ["Running Extended Diagnostics \(Offline\)" in topic 4.2](#) and test all 5494 hardware.



5.7.9 Power Supply Removal and Replacement

1. Remove the cover (see ["Cover Removal and Replacement" in topic 5.7.1](#)).
 2. Remove the 3 screws from the power supply.
 3. Disconnect the 2 cables from the planar board (see ["Internal Cables" in topic 5.2.4](#)).
 4. Release the back of the power supply from the opening for the fan on the back of the 5494 and lift the power supply.
 5. Rotate the power supply up $90\pm$ to release the support bracket.
- Attention:** Hold the power supply carefully to avoid damage to the planar.
6. Reverse the procedure to replace the power supply.
- Notes:**
7. When reinstalling the power supply, replace and partially tighten each screw. When you have replaced all 3 screws, tighten them fully.
 8. Support brackets are not provided with replacement power supplies. Use the support bracket from the defective power supply when installing the replacement.
-
9. After you have completed the removal and replacement procedures, go to ["Running Extended Diagnostics \(Offline\)" in topic 4.2](#) and test all 5494 hardware.



5.7.10 Planar Removal and Replacement

Note: When a new planar is installed, you must run the extended diagnostics to correct or initialize conditions that occur the first time the planar receives power. Step [7a](#) in this procedure explains how to set up the planar for correct operation.

1. Remove the following components in the order listed:

- Cover (see ["Cover Removal and Replacement" in topic 5.7.1](#))
- Twinaxial adapter, and Twinaxial Expansion adapter if applicable (see ["Twinaxial Adapter and Twinaxial Expansion Adapter Removal and Replacement" in topic 5.7.2](#))
- Token-Ring adapter, if applicable (see ["Token-Ring Adapter Removal and Replacement" in topic 5.7.3](#))
- Ethernet adapter, if applicable (see ["Ethernet Adapter Removal and Replacement" in topic 5.7.4](#))
- SIMM (see ["SIMM Removal and Replacement" in topic 5.7.8](#))
- Power supply (see ["Power Supply Removal and Replacement" in topic 5.7.9](#)).

2. Disconnect the 3 internal cables from the planar. See ["Internal Cables" in topic 5.2.4](#) to locate the cables.

3. Remove the 6 screws from the planar.

4. Check that the adapter slot thumbscrews are loosened so that the planar will not hit them.

5. Push the planar toward the front of the 5494, tilt the back edge up, and then lift the planar out.

6. Reverse the procedure to replace the planar. Be sure to remove the SIMM from the defective planar and install it in **slot 1** on the replacement.

Note: To prevent bending the planar, first replace and partially tighten each screw. When you have replaced all 6 screws, tighten them fully.

7. After you have completed the removal and replacement procedures, see "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2.

Note: When using a planar from another 5494, you must copy configuration information from the system diskette onto the planar. See "[Copying 5494 Configuration or Filter Files from Diskette](#)" in topic 6.2.23.

Complete the following steps:

- a. Run setup.

When a new planar is installed and powered on for the first time, SRC 120 is usually displayed.

- If SRC 120 is displayed:

1. The message codes displayed on the left-hand side of the LCD direct you to load the extended diagnostics. Setup automatically is run. You are asked if any adapters have been added, removed, or moved to a different slot in the 5494. Answer YES.

If a Token-Ring adapter is installed, you are asked to select the data rate that the customer is using for the ring; if an Ethernet adapter is installed, you are asked to select the media type that the customer is using for the LAN.

2. When setup has completed, a message code on the LCD is displayed to indicate that you are at the extended diagnostics main menu.

From the main menu, select option 3 to set the date and time.

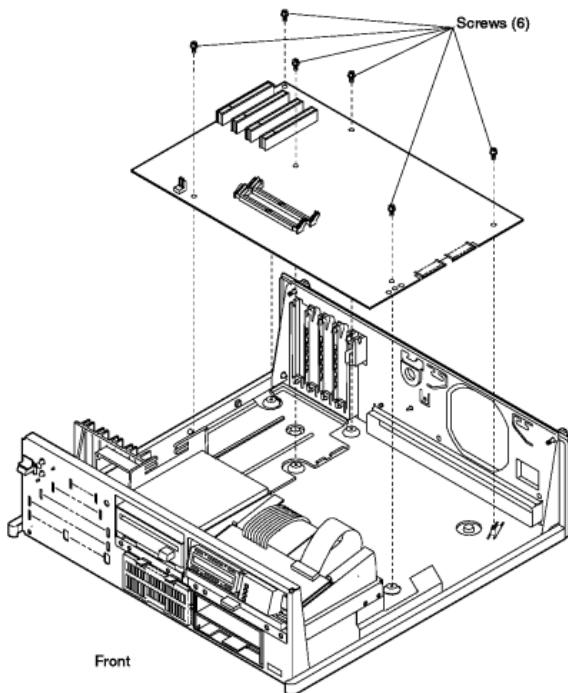
- If SRC 120 is not displayed:

1. Load the extended diagnostics. See "[Running Extended Diagnostics \(Offline\)](#)" in topic 4.2.

2. From the extended diagnostics main menu, select option 3 to set the date and time.

3. If you need to set the data rate that the customer is using for a Token-Ring network or to select the media type that the customer is using for an Ethernet Network, select option 4 to run setup.

- b. Perform a detailed test of the 5494 hardware by selecting option 2 from the extended diagnostics main menu.



6.0 Topic 6. Concurrent Mode from the Operator Panel or Utility Program

Subtopics:

- [6.1 Introduction](#)
 - [6.2 Concurrent Mode from the Operator Panel \(Online\)](#)
 - [6.3 Concurrent Mode Using the 5494 Utility Program](#)
-

6.1 Introduction

Concurrent mode formats 5494 internal information for display at:

- The LCD on the operator panel
- A PS/2 workstation or PC running the 5494 Utility Program (PWS)

Note: The Utility Program panels that are displayed for concurrent mode are in English only.

- A 5250 workstation attached to the 5494 through twinaxial cabling (NWS).

Using the concurrent mode, you can display:

- Configuration information

- AS/400 system communication status
- Information about devices connected to the 5494 through twinaxial connectors
- Information about devices connected to the 5494 through a LAN
- Status of the LAN
- Available storage (not available on the operator panel LCD)
- Trace information (not available on the operator panel LCD)
- Code corrections applied to the 5494 (not available on the operator panel LCD).

To run concurrent mode from the operator panel, see "[Concurrent Mode from the Operator Panel \(Online\)](#)" in topic [6.2](#). To run concurrent mode from the 5494 Utility Program, go to "[Concurrent Mode Using the 5494 Utility Program](#)" in topic [6.3](#). To run concurrent mode from an NWS, see [Topic 7, Concurrent Mode from an NWS \(Online\)](#)."

6.2 Concurrent Mode from the Operator Panel (Online)

You can use the operator panel of the 5494 to obtain information about the current status of the 5494. This information is provided while the 5494 is operating (the Ready LED is on).

You can request information when the operator panel is blank, when an SRC is displayed, or when previous information is displayed. Basic operation of the panel is as follows:

1. Press **Req**.
2. Key in the 3-digit request code for the information you desire.
3. Press **Enter**.

If you press a request code that is not valid, the operator panel displays:

999 | |*****

Press **Esc** to clear.

Some information requires more than one panel for display. For example, the latest error log entries require more than one panel. For these panels, use the left and right arrow keys to view additional information about a particular entry. To see the next entry, press the **up arrow**. To see the previous entry, press the **down arrow**.

To leave the information panel, press **Esc**.

Notes:

1. It is recommended that you return to the normal operator panel after viewing data. If an SRC must be displayed at a later time, it will not overwrite the information currently displayed on the panel.
2. Information on the panel is not refreshed unless the same request is made again.

[Table 13](#) is a summary of concurrent mode requests with the request codes.

Table 13. Concurrent Request Mode Summary		
Request	Enter the Request Code	Topic
Display 5494 status information	Press Req , type 200, and press Enter .	6.2.1
Display 5494 configuration	Press Req , type 201, and press Enter .	6.2.2

Display upstream communication network	Press Req , type 202 , and press Enter .	6.2.3
Display 5494 error log	Press Req , type 203 , and press Enter .	6.2.4
Display 5494 Transmit Activity Check (TAC) and timeout error counters	Press Req , type 204 , and press Enter .	6.2.5
Display 5494 communication and statistical counters	Press Req , type 205 , and press Enter .	6.2.6
Display 5494 communication state byte	Press Req , type 206 , and press Enter .	6.2.7
Display 5494 SNA state byte for LU 4 and LU 7	Press Req , type 207 , and press Enter .	6.2.8
Display 5494 communication interface register	Press Req , type 208 , and press Enter .	6.2.9
Display 5494 LAN Gateway statistical counters	Press Req , type 209 , and press Enter .	6.2.10
Display status of 5494 devices attached to twinaxial ports	Press Req , type 210 , and press Enter .	6.2.11
Display status of 5494 LAN Gateway devices	Press Req , type 211 , and press Enter .	6.2.12
Display 5494 date and time	Press Req , type 212 , and press Enter .	6.2.13
Set 5494 date	Press Req , type 213 , and press Enter .	6.2.14
Set 5494 time	Press Req , type 214 , and press Enter .	6.2.15
Display status and configuration information for each host	Press Req , type 215 , and press Enter .	6.2.16
Display 5494 LAN Card permanent address	Press Req , type 216 , and press Enter .	6.2.17
Display 5494 FR-TR Bridge Counters for the token-ring port	Press Req , type 217 , and press Enter .	6.2.18
Display 5494 FR-TR Bridge Counters for the frame relay port	Press Req , type 218 , and press Enter .	6.2.19
Reset 5494 FR-TR Bridge Counters for the token-ring port	Press Req , type 219 , and press Enter .	6.2.19
Reset 5494 FR-TR Bridge Counters for the frame relay port	Press Req , type 220 , and press Enter .	6.2.19
Restart LAN communication	Press Req , type 230 , and press Enter .	6.2.20
Enable workstation concurrent mode	Press Req , type 290 , and press Enter .	6.2.21
Disable workstation concurrent mode	Press Req , type 291 , and press Enter .	6.2.22
Copy 5494 configuration		6.2.23

Subtopics:

- [6.2.1 Displaying 5494 Online Status Information](#)
- [6.2.2 Displaying 5494 Configuration Information](#)
- [6.2.3 Displaying AS/400 System Connection Communication Configuration Information](#)
- [6.2.4 Displaying the 5494 Error Log](#)
- [6.2.5 Displaying 5494 TAC and Timeout Error Counters](#)
- [6.2.6 Displaying 5494 Communication and Statistical Counters](#)
- [6.2.7 Displaying the 5494 Communication State Byte](#)
- [6.2.8 Displaying 5494 SNA State Byte](#)
- [6.2.9 Displaying the 5494 Communication Interface Register](#)
- [6.2.10 Displaying 5494 LAN Gateway Statistical Counters](#)
- [6.2.11 Displaying the Status of 5494 Devices Attached to Twinaxial Ports](#)
- [6.2.12 Displaying the Status of 5494 LAN Gateway Devices](#)
- [6.2.13 Displaying 5494 Date and Time](#)
- [6.2.14 Setting 5494 Date](#)
- [6.2.15 Setting 5494 Time](#)
- [6.2.16 Displaying 5494 Host Status and Configuration](#)
- [6.2.17 Displaying LAN Card Permanent Address](#)
- [6.2.18 Displaying Frame Relay Token-Ring Bridge Counters](#)
- [6.2.19 Resetting Bridge Counters](#)
- [6.2.20 Restarting LAN Communication](#)
- [6.2.21 Enabling Workstation Concurrent Mode](#)
- [6.2.22 Disabling Workstation Concurrent Mode](#)
- [6.2.23 Copying 5494 Configuration or Filter Files from Diskette](#)

6.2.1 Displaying 5494 Online Status Information

To display 5494 status information, press **Req**, type **200**, and press **Enter**. Press **Esc** to exit. The following information is displayed:

5494 Displays	Explanation
200 1"2"3 4"5"	200 Request code entered by user
	1 Represents status of ALS communication
	" Arrow (up or down) that indicates whether ALS communication to the 5494 is active or inactive
	" = ALS communication is active = ALS communication is inactive
	2 Represents status of devices attached to the 5494 by a twinaxial connection
	" Arrow (up or down) indicates whether workstation communication to the 5494 is taking place
	" = One or more workstations are active = No workstation is active
	3 Represents status of workstations attached to the 5494 by way of LAN
	Arrow (up or down) indicates whether workstation communication to the 5494 is taking place
	" = One or more workstations are active = No workstation is active
	4 Indicates whether the 5494 has successfully contacted the target AS/400 system.
	" Arrow (up or down)
	" = Yes = No
	5 Indicates whether the 5494 has successfully established the LU 6.2 controller session with the target AS/400 system.
	" Arrow (up or down)
	" = Yes = No
Notes:	
1. This display is not automatically refreshed if status changes. To refresh status, press Req , type 200 , and press Enter .	
2. If the 5494 is configured for concurrent host attachment, or if you want to see alternate host configuration information, see " Displaying 5494 Host Status and Configuration " in topic 6.2.16 for status information on all configured AS/400 systems.	

6.2.2 Displaying 5494 Configuration Information

To display 5494 configuration information, press **Req**, type **201**, and press **Enter**. Press **Esc** to exit. The following information is displayed. Use the arrow keys to move from panel to panel.

5494 Displays	Explanation
201-01 ssd c a	201 Request code entered by user
	01 Panel 1 of 5494 configuration information
	ss Storage size (mb)
	d 5494 Clock
	A = Set the 5494 clock from the primary AS/400 system clock

		C = 5494 clock set at the controller only
c		Communications mode
	0	SDLC
	1	X.25
	2	X.21 switched
	3	X.21 leased
	4	Token-Ring
	5	Ethernet
	6	Frame Relay
	7	Frame Relay with FR-TR Bridge
a		Customer may configure one to four AS/400 system connections. This field is the number of the configured AS/400 system connection that is currently selected (1-4).
201-02 ccx ii aa	201	Request code entered by user
	02	Panel 2 of 5494 configuration information
	cc	Logical connection retry counter (00-FF)
	x	Arrow (up or down) indicates retry status " = Configured for continuous re-tries at 10-minute intervals after the initial re-try count is exhausted. = Not configured for continuous retries.
	ii	Logical connection retry interval (00-1C)
	aa	SDLC or LLC station address (not displayed for token-ring, Ethernet, or frame relay)
201-03 nnnnnnnn	201	Request code entered by user
	03	Panel 3 of 5494 configuration information
	nnnnnnnn	5494 network ID
201-04 11111111	201	Request code entered by user
	04	Panel 4 of 5494 configuration information
	11111111	5494 logical unit (LU) name
201-05 cccccccc	201	Request code entered by user
	05	Panel 5 of 5494 configuration information
	cccccccc	5494 control point (CP) name
201-06 pppppppp	201	Request code entered by user
	06	Panel 6 of 5494 configuration information
	pppppppp	5494 mode name
201-07 hhhhhh	201	Request code entered by user
	07	Panel 7 of 5494 configuration information
	hhhhhhh	Network ID of current AS/400 system
201-08 uuuuuuuu	201	Request code entered by user
	08	Panel 8 of 5494 configuration information
	uuuuuuuu	LU name of current AS/400 system
201-09 rr dd ee	201	Request code entered by user
	09	Panel 9 of 5494 configuration information
	rr	Read-only storage (ROS) ID
	dd	5494 functional code release level
	ee	Data level of correction file
201-10 cc xxxxx	201	Request code entered by user
	10	Panel 10 of 5494 configuration information
	cc	Communication cable type 00 = X.21 cable 01 = V.35 cable

		<p>10 = EIA 232D cable 11 = Incorrect cable or no cable attached</p> <p>Note: If Token Ring or Ethernet is used for AS/400 system communication, this panel shows no cable attached.</p>
	xxxxx	XID block number or * to indicate no XID block number was configured.
201-11 aaaa bbbb	201	Request code entered by user
	11	Panel 11 of 5494 configuration information
	aaaa	ID of card in slot 1 E00F = Token-Ring adapter FEE6 = Ethernet adapter 8FF6 = Twinaxial adapter FFFF = No card is present
	bbbb	ID of card in slot 2 E00F = Token-Ring adapter FEE6 = Ethernet adapter 8FF6 = Twinaxial adapter FFFF = No card is present
201-12 cccc dddd	201	Request code entered by user
	12	Panel 12 of 5494 configuration information
	cccc	ID of card in slot 3 E00F = Token-Ring adapter FEE6 = Ethernet adapter 8FF6 = Twinaxial adapter FFFF = No card is present
	dddd	ID of card in slot 4 E00F = Token-Ring adapter FEE6 = Ethernet adapter 8FF6 = Twinaxial adapter FFFF = No card is present
201-13 ss-sssss	201	Request code entered by user
	13	Panel 13 of 5494 configuration information
	ss-sssss	5494 serial number
201-14 iu c ppp	201	Request code entered by user
	14	Panel 14 of 5494 configuration information
	i	Start the controller session with the AS/400 system: 0 = When the first NWS or PWS is powered on 1 = Immediately after the 5494 is powered on
	u	When an indication is received from the AS/400 system that there are no NWS sessions: 0 = Terminate the controller session unless there is an active PWS session, or there is an active controller session with another host. 1 = Do not terminate the controller session.
	c	Concurrent host attachment: 0 = Not configured for concurrent host attachment (the information above for parameters i and u refer to the currently selected host) 1 = Configured for concurrent host attachment (the information above for parameters i and u refer to the primary host)
	ppp	If configured for concurrent host attachment, this is the printer timeout value which represents the number of seconds a 5494 waits before accepting a print job from a different host.
		Note: If set to zero, printer sharing is disabled.
201-15 mmdd ijss	201	Request code entered by user
	15	Panel 15 of 5494 configuration information

	mm	Maximum number in hexadecimal of workstations (ALLOWED)
	dd	LAN Gateway configured 00 = No 01 = Token Ring 02 = Ethernet
	i	Status of the LAN 0 = Closed or not configured 1 = Open (active)
	j	Configured Token-Ring Gateway speed 0 = 4 Mbps 1 = 16 Mbps
		Note: This field is blank for Ethernet Gateway.
	ss	5494 LAN Gateway service access point (SAP)

Note: Panels 201-16 through 201-20 appear only if a LAN gateway is configured.

201-16 a tttttt*	201	Request code entered by user
	16	Panel 16 of 5494 configuration information
	a	For Ethernet: E = Address in Ethernet format T = Address in token-ring format For token ring, this field is blank.
	tttttt*	The first 6 digits of the 5494 LAN address if Token Ring or Ethernet is being used for workstation attachment. Go to panel 16 to see the remainder of the address.
201-17 *tttttt	201	Request code entered by user
	17	Panel 17 of 5494 configuration information
	*tttttt	Last 6 digits of the 5494 LAN address
201-18 rr ii aa	201	Request code entered by user
	18	Panel 18 of 5494 configuration information
	rr	Response timer (T1) in seconds Note: If rr = *, the T1 timer value is calculated by the 5494 based on the number of bridges in the network.
	ii	Inactivity timer (Ti) in seconds
	aa	Receiver acknowledgment timer (T2) in milliseconds
201-19 cc oo mm	201	Request code entered by user
	19	Panel 19 of 5494 configuration information
	cc	Retry count (N2)
	oo	Maximum out (TW)
	mm	Maximum in (N3)
201-20 mmmm ffff	201	Request code entered by user
	20	Panel 20 of 5494 configuration information
	mmmm	Media type: 10b2 = 10BASE2 10b5 = 10BASE5 10bT = 10BASE-T * = No Ethernet adapter found
	ffff	Frame format: 8023 = Ethernet 802.3 V2 = DIX Ethernet Version 2.0
		Note: Panel 19 appears only if the LAN Gateway is Ethernet.

Note: Panels 201-21 through 201-30 appear only if Frame Relay Token-Ring Bridging is configured.

201-21 ttt fff	201 Request code entered by user 21 Panel 21 of 5494 configuration info ttt LAN ring number fff Frame Relay virtual LAN ring number
201-22 sssssss	201 Request code entered by user 22 Panel 22 of 5494 configuration info ssssssss LAN ring speed (hexadecimal)
201-23 sssss	201 Request code entered by user 23 Panel 23 of 5494 configuration info ssssss Frame Relay line speed (hexadecimal)
201-24 aaaaaa*	201 Request code entered by user 24 Panel 24 of 5494 configuration info aaaaaa* First six digits of the Frame Relay MAC address. Go to panel 25 to see the remainder of the address.
201-25 *aaaaaa	201 Request code entered by user 25 Panel 25 of 5494 configuration info *aaaaaa Last six digits of the Frame Relay MAC address.
201-26 dddd dddd 201-27 dddd dddd	201 Request code entered by user 26 or 27 Panel number of 5494 configuration information dddd One to four DLCIs used for the FR-TR bridge. If one or two are configured, panel 27 is not shown.
201-28 bb pppp	201 Request code entered by user 28 Panel 28 of 5494 configuration info bb Bridge number pppp Bridge priority
201-29 mm tt l	201 Request code entered by user 29 Panel 29 of 5494 configuration info mm Maximum age BPDU tt Time period between BPDUs l Status of bridge frame forwarding 0 = Frame forwarding disabled 1 = Frame forwarding enabled
201-30 a nr llff	201 Request code entered by user 30 Panel 30 of 5494 configuration info a Enable Automatic Spanning Tree Operation 0 = Disabled 1 = Enabled n Forward Spanning Tree Explorer frames by LAN port: 0 = Disabled 1 = Enabled r Forward Spanning Tree Explorer frames by Frame Relay port: 0 = Disabled 1 = Enabled ll Hop Count for LAN port. ff Hop Count for Frame Relay port.

6.2.3 Displaying AS/400 System Connection Communication Configuration Information

You can use the operator panel to display configuration information about the communication network that is used for the AS/400 system connection. The format of the response is according to the communication mode (SDLC, X.25, X.21 switched, Token Ring, Ethernet, or frame relay), as shown in the following table.

To display AS/400 system connection configuration information, Press **Req**, type **202**, and press **Enter**. Use the arrow keys to move from panel to panel. Press **Esc** to exit.

SDLC	See Table 14
X.21 Leased	See Table 14
X.21 Switched	See Table 16
X.25	See Table 15
Token Ring	See Table 17
Ethernet	See Table 18
Frame Relay	See Table 19

| Table 14. SDLC or X.21 Leased |

5494 Displays	Explanation
202-11 sdmn cpl	<p>202</p> <p>11 Indicates SDLC or X.21 leased configuration information</p> <p>s Line type</p> <p> 0 = Leased 1 = Switched 2 = Switched, V.25 bis auto-dial</p> <p>d Line facility</p> <p> 0 = Half-duplex 1 = Duplex</p> <p>m Connection type</p> <p> 0 = Multipoint 1 = Point-to-point</p> <p>n Data encoding</p> <p> 0 = NRZI 1 = NRZ</p> <p>c Connection method</p> <p> 0 = DTR 1 = CDSTL</p> <p>p Send leading pad</p> <p> 0 = No leading pad required 1 = Leading pad required</p> <p>l Local loopback support</p> <p> 0 = No local loopback supported 1 = Local loopback supported</p>

Table 15. X.25

5494 Displays	Explanation
202-21 m pl ssss	<p>202 Request code entered by user</p> <p>21 Panel 1 of X.25 configuration information</p> <p>m Packet level sequence numbering</p> <p> 0 = Modulo 8 1 = Modulo 128</p> <p>p Packet window size</p> <p> 2 to 7 for modulo 8 2 to F for modulo 128</p> <p>l Link window size (1 to 7)</p> <p>ssss Packet size in bytes (0064, 0128, 0256, 0512, 1024)</p>
202-22 v fmlr cc	<p>202 Request code entered by user</p> <p>22 Panel 2 of X.25 configuration information</p> <p>v Virtual circuit type</p> <p> 0 = Multiple PVCs, SVCs, or SVC call allowed 1 = PVC only 2 = SVC answer only</p> <p>f Flow control negotiation</p> <p> 0 = Not permitted 1 = Permitted</p> <p>m Manual options</p> <p> 0 = Not permitted 1 = Permitted</p> <p>l Local loopback</p> <p> 0 = Not permitted 1 = Permitted</p> <p>r Reverse charging</p> <p> 0 = Does not accept reverse charging 1 = Accepts reverse charging</p> <p>cc LLC selection</p> <p> 00 = QLLC 01 = ELLC</p>
202-23 uisd cctt	<p>202 Request code entered by user</p> <p>23 Panel 3 of X.25 configuration information</p> <p>u Telenet** type network attachment</p> <p> 0 = Does not support 1 = Does support</p> <p>i Link initiation</p> <p> 0 = Either 5494 or X.25 network 1 = X.25 network only</p> <p>s X.25 network subscription</p> <p> 0 = 1988 subscription 1 = 1984 subscription 2 = 1980 subscription</p> <p>d Diagnostic codes used</p> <p> 0 = 1984/1988 SNA 1 = 1984/1988 ISO 2 = 1980 SNA</p> <p>cc Retry counter (N2) in hexadecimal (00-FF)</p> <p>tt Retry interval (T1) in hexadecimal (00-1C)</p>

Table 16. X.21 Switched

5494 Displays	Explanation
202-31 ccds cpcp	<p>202 Request code entered by user</p> <p>31 Panel 1 of X.21 switched configuration information</p> <p>cc Recall counter in hexadecimal (00-FF)</p> <p>d Recall delay time in hexadecimal (1-F)</p> <p>s SHM direct call support for reconnecting to the</p>

		<p>current host</p> <p>0 = Direct call not supported 1 = Direct call supported</p> <p>cp Optional 2-digit call progress signals</p> <p>Note: CP signals shown as preceded or superseded by an underscore (for example, _3 or 3_) indicate a 0x CP signal (03).</p>
202-32 cpcp cpcp	202	<p>Request code entered by user</p> <p>32 Panel 2 of X.21 switched configuration information</p> <p>cp Optional 2-digit call progress signals</p> <p>Note: This panel appears only if needed to display all possible CP signals defined in the 5494 configuration.</p>
202-33 cpcp cpcp	202	<p>Request code entered by user</p> <p>33 Panel 3 of X.21 switched configuration information</p> <p>cp Optional 2-digit call progress signals</p> <p>Note: This panel appears only if needed to display all possible CP signals defined in the 5494 configuration.</p>

Table 17. Token Ring	
5494 Displays	Explanation
202-41 hhhhhh*	<p>202 Request code entered by user</p> <p>41 Panel 1 of Token-Ring configuration information</p> <p>hhhhhh* First 6 digits of current AS/400 system Token-Ring address</p>
202-42 *hhhhh	<p>202 Request code entered by user</p> <p>42 Panel 2 of Token-Ring configuration information</p> <p>*hhhhh Last 6 digits of current AS/400 system Token-Ring address</p>
202-43 ss	<p>202 Request code entered by user</p> <p>43 Panel 3 of Token-Ring configuration information</p> <p>ss Current AS/400 system SAP</p>
202-44 jjjjjj*	<p>202 Request code entered by user</p> <p>44 Panel 4 of Token-Ring configuration information</p> <p>jjjjjj* First 6 digits of 5494 Token-Ring address</p>
202-45 *jjjjjj	<p>202 Request code entered by user</p> <p>45 Panel 5 of Token-Ring configuration information</p> <p>*jjjjjj Final 6 digits of 5494 Token-Ring address</p>
202-46 ss	<p>202 Request code entered by user</p> <p>46 Panel 6 of Token-Ring configuration information</p> <p>ss 5494 SAP</p>
202-47 rr ii aa	<p>202 Request code entered by user</p> <p>47 Panel 7 of Token-Ring configuration information</p> <p>rr Response timer (T1) in seconds</p> <p>ii Inactivity timer (Ti) in seconds</p> <p>aa Receiver acknowledgment timer (T2) in milliseconds</p>
202-48 nn oo pp	<p>202 Request code entered by user</p> <p>48 Panel 8 of Token-Ring configuration information</p> <p>nn Retry count (N2)</p> <p>oo Maximum frames out (TW)</p> <p>pp Maximum frames in (N3)</p>

Table 18. Ethernet

5494 Displays	Explanation
202-51 a hhhhhh*	<p>202 Request code entered by user</p> <p>51 Panel 1 of Ethernet configuration information</p> <p>a Address format:</p> <p style="padding-left: 20px;">T = Token-Ring address format E = Ethernet address format</p> <p>hhhhhh* First 6 digits of current AS/400 system Ethernet address</p>
202-52 *hhhhhh	<p>202 Request code entered by user</p> <p>52 Panel 2 of Ethernet configuration information</p> <p>*hhhhhh Last 6 digits of current AS/400 system Ethernet address</p>
202-53 ss	<p>202 Request code entered by user</p> <p>53 Panel 3 of Ethernet configuration information</p> <p>ss Current AS/400 system SAP</p>
202-54 a jjjjjj*	<p>202 Request code entered by user</p> <p>54 Panel 4 of Ethernet configuration information</p> <p>a Address format:</p> <p style="padding-left: 20px;">E = Ethernet address format T = Token-Ring address format</p> <p>jjjjjj* First 6 digits of 5494 Ethernet address</p>
202-55 *jjjjjj	<p>202 Request code entered by user</p> <p>55 Panel 5 of Ethernet configuration information</p> <p>*jjjjjj Last 6 digits of 5494 Ethernet address</p>
202-56 ss	<p>202 Request code entered by user</p> <p>56 Panel 6 of Ethernet configuration information</p> <p>ss Current 5494 SAP</p>
202-57 rr ii aa	<p>202 Request code entered by user</p> <p>57 Panel 7 of Ethernet configuration information</p> <p>rr Response timer (T1) in seconds</p> <p>ii Inactivity timer (Ti) in seconds</p> <p>aa Receiver acknowledgment timer (T2) in milliseconds</p>
202-58 nn oo pp	<p>202 Request code entered by user</p> <p>58 Panel 8 of Ethernet configuration information</p> <p>nn Retry count (N2)</p> <p>oo Maximum frames out (TW)</p> <p>pp Maximum frames in (N3)</p>
202-59 mmmm ffff	<p>202 Request code entered by user</p> <p>59 Panel 9 of Ethernet configuration information</p> <p>mmmm Media type:</p> <p style="padding-left: 20px;">10b2 = 10BASE2 10b5 = 10BASE5 10bT = 10BASE-T * = No Ethernet adapter found</p> <p>ffff Frame format:</p> <p style="padding-left: 20px;">8023 = Ethernet 802.3 V2 = DIX Ethernet Version 2.0</p>

Table 19. Frame Relay

5494 Displays	Explanation
202-61 sdmn cpl	<p>202 Request code entered by user</p> <p>61 Panel 1 of frame relay configuration information</p> <p>s 0 = Nonswitched</p> <p>d 1 = Duplex</p> <p>m 1 = Point-to-point</p> <p>n zero insertion:</p> <p style="padding-left: 20px;">0 = NRZI 1 = NRZ</p>

	c 0 = DTR
	p 0 = No leading pad required
	l 0 = No local loopback
202-62 ddd aa ss	202 Request code entered by user 62 Panel 2 of frame relay configuration information ddd Data Link Connection Identifier (DLCI) aa Current AS/400 SAP ss Current 5494 SAP
202-63 l pp ff	202 Request code entered by user 63 Panel 3 of frame relay configuration information l LMI mode: 0 = No LMI 1 = ANSI T1.617 Annex D 2 = CCITT Q.933 Annex A pp Polling interval in seconds ff Full inquiry interval in cycles
202-64 rr ii aa	202 Request code entered by user 64 Panel 4 of frame relay configuration information rr Response timer (T1) in seconds ii Inactivity timer (Ti) in seconds aa Receiver acknowledgment timer (T2) in milliseconds
202-65 rr mm ii	202 Request code entered by user 65 Panel 5 of frame relay configuration information rr Retry count (N2) mm Maximum frames out (TW) ii Maximum frames in (N3)

6.2.4 Displaying the 5494 Error Log

You can use the operator panel to display the last 13 errors entered in the 5494 error log. The most recent error entered is displayed first.

Use the up and down arrow keys to scroll through the entries. Use the left and right arrow keys to display more information about the entry being displayed. To view the second error in the log, press the **up arrow** key. The end of the list is denoted by a row of asterisks.

Note: To view **all errors** in the 5494 Error Log, use the View 5494 Error Log function of extended diagnostics (see "View the 5494 Error Log" in topic [4.2](#) for instructions), or use concurrent mode from an NWS or a PWS.

To display the contents of the error log, press **Req**, type **203**, and press **Enter**. Press **Esc** to exit.

5494 Displays	Explanation
203 ss eeeee >	203 Request code entered by user ss Workstation identifier Note: 00 may represent the 5494 eeeeee Six-digit SRC > More information to be viewed by pressing the right arrow Notes: 1. A 3-digit hardware SRC displays as a 6-digit SRC with leading E00 (for example, E00117). 2. A 4-digit SRC displays as a 6-digit SRC with 2 leading zeros (for example, 000052).

		3. A 12-digit code SRC displays as a 6-digit SRC beginning with FF and 6 digits of sense data (for example, FF1234567890).
203 <mdd hhmm>	203	Request code entered by user < Return to panel with SRC by pressing the left arrow mdd Month and day error logged hhmm Hour and minute error logged > Sense information may be viewed by pressing the right arrow
203 <ssssssxxyy>	203	Request code entered by user < Return to panel with date and time by pressing the left arrow sssss For SRCs beginning with FF, this is the remaining 6 digits of the 12-digit SRC ssssssxx Sense data for a 6-digit SRC except LAN errors ssssssxyy Sense data for a 4-digit SRC or the first 5 bytes of sense data for LAN errors > Remaining sense bytes for LAN errors may be viewed by pressing the right arrow
203 <ssxx	203	Request code entered by user < Return to panel with first 5 bytes of sense data by pressing the left arrow ss Indicates sixth byte of sense data for LAN errors xx Indicates seventh byte of sense data for LAN errors (if present) Note: If no additional sense data is available, ssxx is blank.
203 *****	203	Request code entered by user ***** Indicates end of the error log entries. The next entry displayed is the first entry if the up arrow is pressed. Note: This panel also displays if there are no errors logged.

6.2.5 Displaying 5494 TAC and Timeout Error Counters

You can use the operator panel to display the TAC and timeout error counters logged for each port. Use the up and down arrow keys to scroll through the entries.

To display the contents of the error log, press **Req**, type **204**, and press **Enter**. Press **Esc** to exit.

5494 Displays	Explanation
204-pp tacs time	204 Request code entered by user pp Port for which the errors are displayed (00-07) tacs Four-digit hexadecimal count of TAC errors time Four-digit hexadecimal count of timeout errors

6.2.6 Displaying 5494 Communication and Statistical Counters

You can use the concurrent mode on the operator panel to display the *nonzero* communication counters and the statistical counters. (See "[Communication Error and Statistical Counters](#)" in topic B.10.1 for an explanation of these counters.) Use the up and down arrow keys to scroll through the entries. The format of the response is according to the communication mode (SDLC, X.21, X.25, Token Ring, Ethernet, or frame relay), as shown in the following table.

To display the contents, press **Req**, type **205**, and press **Enter**. Press **Esc** to exit.

SDLC	See Table 20
X.21	See Table 20
X.25	See Table 20
Token Ring	See Table 21
Ethernet	See Table 22
Frame Relay	See Table 23

Table 20. SDLC, X.21, or X.25	
5494 Displays	Explanation
205-id ccssssss	<p>205 Request code entered by user</p> <p>id Either the communication counter ID (from 60 to 6D) or statistical counter ID (6E or 6F)</p> <p>cc or ccssssss The 1-byte count in hexadecimal for a particular communication counter, or 4-byte count in hexadecimal for a particular statistical counter</p> <p>Note: If the communication counter is equal to zero, it is not displayed.</p>

Table 21. Token Ring	
5494 Displays	Explanation
205-id occccccc	<p>205 Request code entered by user</p> <p>id 01 Line errors 02 Burst errors 03 Abort delimiters 04 Receive congestion 05 Frequency errors 06 Internal errors 07 Access control errors 08 Lost frames 09 Frame copy errors 10 Token errors</p> <p>o Overflow bit</p> <p>ccccccc Counter</p>
205-id rrrr rrrr	<p>205 Request code entered by user</p> <p>id 11-15 Routing information panels</p> <p>rrrr Routing information</p> <p>Note: From one to five panels of routing information is displayed.</p>
205-id occccccc	<p>205 Request code entered by user</p> <p>id 16 Transmit error count 17 Receive error count 18 T1 timer expired error count 19 Transmit frame count 20 Receive frame count</p> <p>o Overflow bit</p> <p>ccccccc Counter</p>

Table 22. Ethernet	
5494 Displays	Explanation
205-id cccccccc	<p>205 Request code entered by user</p> <p>id</p> <ul style="list-style-type: none"> 01 Network transmit errors 02 Network receive congestion errors 03-15 Reserved <p>o Overflow bit</p> <p>cccccccc Counter</p>
205-id oooooooo	<p>205 Request code entered by user</p> <p>id</p> <ul style="list-style-type: none"> 16 Transmit error count 17 Receive error count 18 T1 timer expired error count 19 Transmit frame count 20 Receive frame count <p>o Overflow bit</p> <p>oooooooo Counter</p>

Table 23. Frame Relay	
5494 Displays	Explanation
205-id cccccccc	<p>205 Request code entered by user</p> <p>id</p> <ul style="list-style-type: none"> 01 LMI timeout count 02 LMI sequence error count 03 LMI protocol error count 04 PM DSR error count 05 PM CTS error count 06 Aborted frame count 07 FCS error count 08 Residue error count 09 Overrun count 10 Underrun count 11 No receive buffers count 12 Misaddressed frame count 13 Frames received in error 14 Filtered frame count 15 Frames received with BECN count 16 Frames received with FECN count 17 Frames received with DE count 18 T1 timer expired error count 19 Transmit frame count 20 Receive frame count <p>cccccccc Counter</p>

6.2.7 Displaying the 5494 Communication State Byte

To display the communication state byte, press **Req**, type **206**, and press **Enter**. Press **Esc** to exit.

State byte information varies depending on communication type.

SDLC	See Table 24
X.21 Leased	See Table 24
X.21 Switched	See Table 26
X.25	See Table 25
Token Ring	See Table 27
Ethernet	See Table 28
Frame Relay	See Table 29

Table 24. SDLC or X.21 Leased

5494 Displays	Explanation
206-11 abcd efgh	<p>206 Request code entered by user</p> <p>11 Indicates SDLC or X.21 leased communication</p> <p>a 1=Address compare</p> <p>b 1=CRC good</p> <p>c 1=XID frame received</p> <p>d 1=Set normal response mode (SNRM) received</p> <p>e 0=Normal disconnect mode (NDM) entered 1=normal response mode (NRM) entered</p> <p>f Reserved</p> <p>g Reserved</p> <p>h 0=NDM is actual state 1=NRM is actual state</p>

Table 25. X.25

5494 Displays	Explanation
206-21 abcd efgh	<p>206 Request code entered by user</p> <p>21 Indicates X.25 communication</p> <p>a 1 = Address compare</p> <p>b 1 = CRC good</p> <p>c 1 = Link activated</p> <p>The unnumbered acknowledgment (UA) was received from the set asynchronous balance mode (SABM) that was previously sent</p> <p>d 1 = Packet level restarted (restart confirmation received)</p> <p>e 1 = Data transfer mode entered</p> <p>f Reserved</p> <p>g Reserved</p> <p>h 1 = LLC information transfer entered</p>

Table 26. X.21 Switched

5494 Displays	Explanation
206-31 abcd efgh	<p>206 Request code entered by user</p> <p>31 Indicates X.21 switched</p> <p>a 1 = Call sequence started</p> <p>b 1 = Ready for data state entered (state 12, SDLC mode)</p> <p>c 1 = Address compared</p> <p>d 1 = CRC good</p> <p>e 1 = XID frame received</p> <p>f 1 = SNRM received</p> <p>g 1 = NRM entered</p> <p>h 0 = NDM is actual state 1 = NRM is actual state</p>

Table 27. Token Ring

5494 Displays	Explanation
206-41 abcd efgh	206 Request code entered by user 41 Indicates Token Ring a-f Reserved g 0 = adapter closed 1 = adapter open h 0 = 4-Mbps Token-Ring speed 1 = 16-Mbps Token-Ring speed

Table 28. Ethernet

5494 Displays	Explanation
206-51 abcd efgh	206 Request code entered by user 51 Indicates Ethernet a-c Reserved d 0 = adapter closed 1 = adapter open e-f Media type: 10b2 = 10BASE2 10b5 = 10BASE5 10bT = 10BASE-T * = No Ethernet adapter found

Table 29. Frame Relay

5494 Displays	Explanation
206-61 abcd efgh	206 Request code entered by user 61 Indicates Frame Relay a-g Reserved h 0 = adapter closed 1 = adapter open

6.2.8 Displaying 5494 SNA State Byte

To display the 5494 SNA state byte, press **Req**, type **207**, and press **Enter**. Press **Esc** to exit.

5494 Displays	Explanation
207 abcd efgh	207 Request code entered by user a 1 = Activate logical unit (ACTLU) received b Reserved c 1 = SNA LU 4 or 7 BIND complete

d	1 = Processing workstation data streams
e	1 = EC load in progress
f	1 = EC load LU state flag
g	1 = LU 6.2 controller session active
h	1 = Primary host download complete

6.2.9 Displaying the 5494 Communication Interface Register

To display the 5494 communication interface register for EIA 232D, V.35, or X.21 networks, press **Req**, type **208**, and press **Enter**. (This request is not valid when a Token-Ring or Ethernet network is used as the communication interface between the 5494 and the AS/400 system.) Press **Esc** to exit.

Use the **up** and **down arrow** keys to scroll through the entries.

Table 30. EIA 232D or V.35	
5494 Displays	Explanation(1)
208-11 abcd efgf	<p>208 Request code entered by user</p> <p>11 Panel 1 of EIA 232D or V.35 communication interface data</p> <p>a Receive data (RD)</p> <p>b Reserved</p> <p>c Received signal element timing (RSET)</p> <p>d Transmitted signal element timing (TSET)</p> <p>e Data set ready (DSR)</p> <p>f Ready for sending (RFS)</p> <p>g Carrier detect (CD)</p> <p>h Calling indicator (CI)</p>
208-12 abcd efgf	<p>208 Request code entered by user</p> <p>12 Panel 2 of EIA 232D or V.35 communication interface data</p> <p>a Transmit data (TD)</p> <p>b DTR/CDSTL</p> <p>c Request to send (RTS)</p> <p>d Local loopback</p> <p>e Reserved</p> <p>f Reserved</p> <p>g Reserved</p> <p>h Reserved</p>
Note:	
1. 0 in a bit position indicates an active signal; 1 indicates an inactive signal.	

Table 31. X.21	
5494 Displays	Explanation(1)
208-21 abcd efgf	<p>208 Request code entered by user</p> <p>21 Panel 1 of X.21 communication interface data</p> <p>a Receive data (RD)</p>

	b Reserved c Network clock d Network clock e Reserved f Reserved g Indicate (I) h 1 = Transmit wait for network ready
208-22 abcd efg'h	208 Request code entered by user 22 Panel 2 of X.21 communication interface data a Transmit data (TD) b Reserved c Control (C) d Reserved e 1 = DCE not ready f Reserved g 1 = Wait for proceed to select h Reserved
Note:	
1. Unless otherwise indicated, a 0 in a bit position indicates an active or ON signal; a 1 indicates an inactive or OFF signal.	

Table 32. Token Ring	
5494 Displays	Explanation
208-41 *****	208 Request code entered by user 41 Panel 1 of Token-Ring communication interface data ***** Indicates that a communication interface register for token ring is not valid.

Table 33. Ethernet	
5494 Displays	Explanation
208-51 *****	208 Request code entered by user 51 Panel 1 of Ethernet communication interface data ***** Indicates that a communication interface register for Ethernet is not valid.

6.2.10 Displaying 5494 LAN Gateway Statistical Counters

To display the statistical counters for a LAN that is used to attach workstations to the 5494, press **Req**, type **209**, and press **Enter**. Press **Esc** to exit.

Use the up and down arrow keys to scroll through the entries.

Table 34. Token Ring		
5494 Displays	Explanation	
209-id cccccccc	209 Request code entered by user id 01 Line errors 02 Burst errors 03 Abort delimiters 04 Receive congestion 05 Frequency errors 06 Internal errors 07 Access control errors 08 Lost frames 09 Frame copy errors 10 Token errors 11 Transmit error count 12 Receive error count 13 T1 timer expired count 14 Transmit frame count 15 Receive frame count o Overflow bit cccccccc Counter	

Table 35. Ethernet		
5494 Displays	Explanation	
209-id cccccccc	209 Request code entered by user id 01 Network transmit errors 02 Network receive congestion errors 03-10 Reserved 11 Station transmit error count 12 Station receive error count 13 T1 timer expired count 14 Transmit frame count 15 Receive frame count o Overflow bit cccccccc Counter	

Table 36. No LAN Gateway		
5494 Displays	Explanation	
209 *****	Indicates that there is no LAN Gateway configured	

6.2.11 Displaying the Status of 5494 Devices Attached to Twinaxial Ports

To display the identifying information of all devices that are attached and responding to polls from the 5494 at the twinaxial ports, press **Req**, type **210**, and press **Enter**. Press **Esc** to exit.

5494 Displays	Explanation
210-id www mmm	210 Request code entered by user id Port/station address of the device

	www	The first digit is the port address (0-7) and the second digit is the station address (0-6).
	Device type	
	mml	Note: The device type is obtained from the workstation or printer. Printers return a group designation; the device type displayed may not be the actual printer device type but rather another printer device type that has the same capabilities.
210 *****	210	Request code entered by user

***** Indicates the end of the active devices. The next entry displayed is the first entry if the up arrow is pressed.

Note: This panel also displays if none of the devices attached to the 5494 are turned on.

6.2.12 Displaying the Status of 5494 LAN Gateway Devices

To display the Token-Ring or Ethernet address of the devices that are attached to the 5494 by a LAN and are currently in session with the AS/400, press **Req**, type **211**, and press **Enter**. Press **Esc** to exit.

Use the **up** and **down arrow** keys to scroll through the entries.

5494 Displays	Explanation
211 aaaaaaaaaa	211 Request code entered by user aaaaaaaaaaa Address of a device attached by way of Token Ring or Ethernet
211 *****	211 Request code entered by user ***** Indicates the end of the active devices. The next entry displayed is the first entry if the up arrow is pressed. Note: This panel also displays if none of the devices attached to the 5494 are turned on.

6.2.13 Displaying 5494 Date and Time

To display the date and time set on the 5494, press **Req**, type **212**, and press **Enter**. Press **Esc** to exit.

Use the up and down arrow keys to scroll through the panels.

5494 Displays	Explanation
212-01 yy-mm-dd	212 Request code entered by user 01 Panel 1 -- displays 5494 date yy-mm-dd Year-month-day
212-02 hh:mm:ss	212 Request code entered by user 02 Panel 2 -- displays 5494 time

hh:mm:ss	Hour (24-hour clock):minutes:seconds
----------	--------------------------------------

6.2.14 Setting 5494 Date

To set the date on the 5494, press **Req**, type **213**, and press **Enter**.

The panel displays the date currently set in the 5494. Type the new date (format yy-mm-dd) over the date displayed, and press **Enter**. The valid ranges are:

- For year:
 - 91-99 for the years 1991-1999
 - 00-50 for the years 2000-2050
- For month: 01-12
- For day:
 - 01-29 for February (29 is valid during leap year only)
 - 01-30 for months with 30 days
 - 01-31 for months with 31 days.

If the date is valid, the screen clears and the date is saved. If the date is not valid, the 5494 beeps once and the cursor is positioned under the left digit of the value that is not valid. Key in a valid date, and press **Enter**. If you want to cancel the request to change, press **Esc**. The format of the panel is:

5494 Displays	Explanation
213-01 yy-mm-dd	213 Request code entered by user
	01 Panel 1 of 1
	yy Year
	mm Month
	dd Day

6.2.15 Setting 5494 Time

To set the time on the 5494, press **Req**, type **214**, and press **Enter**.

The panel displays the time currently set in the 5494. Type the new time (format hh:mm:ss) over the time displayed, and press **Enter**. The valid ranges are:

- For hour: 00-23
- For minutes: 00-59
- For seconds: 00-59

If the time is valid, the screen clears and the time is saved. If the time is incorrect, the 5494 beeps once and the cursor is positioned under the left digit of the incorrect value. Key in a valid time and press **Enter**. If you want to cancel the request to change, press **Esc**.

The format of the panel is as follows:

S494 Displays	Explanation
214-01 hh:mm:ss	214 Request code entered by user 01 Panel 1 of 1 hh Hour mm Minute ss Second

| 6.2.16 Displaying 5494 Host Status and Configuration

This request provides controller session status and configuration information for each configured host. The status is useful if configured for concurrent host attachment.

| To request the host status and configuration information, press **Req**, type **215**, and press **Enter**. The following information is displayed. Use the up and down arrow keys to move from panel to panel.

S494 Displays	Explanation
215-11 p 3"4"5"	215 Request code entered by user 11 Host designation and panel number. This field is set to 11, 21, 31, or 41 for the alternate hosts (H1, H2, H3, or H4), if configured. p 0 = This is an alternate host. 1 = This is the primary host. 2 = This is the alternate alert host. 3 If an up or down arrow appears after the 3, then this host is the data link control host and the arrow indicates the status of the physical link. " Arrow (up or down) " = ALS has been contacted = ALS has not been contacted 4 Indicates whether the 5494 has successfully contacted this AS/400 system: " Arrow (up or down) " = AS/400 has been contacted = AS/400 has not been contacted 5 Indicates whether the 5494 has an LU 6.2 controller session with this AS/400 system. " Arrow (up or down) " = Controller session is active = Controller session is not active
215-12 11111111	215 Request code entered by user 12 This field is set to 22, 32, or 42 for the alternate hosts, if configured. 11111111 <u>LU name of this AS/400 system</u>
215-13 nnnnnnnn	215 Request code entered by user 13 This field is set to 23, 33, or 43 for the alternate hosts, if configured. nnnnnnnn Network ID for this AS/400 system
215-14 55555555	215 Request code entered by user 14 This field is set to 24, 34, or 44 for the alternate hosts, if configured. 55555555 5494 network ID for this AS/400 system
215-15 mmmmmmmm	215 Request code entered by user 15 This field is set to 25, 35, or 45 for the alternate hosts, if configured. mmmmmmmm Mode name for this AS/400 system
215-16 i u	215 Request code entered by user 16 This field is set to 26, 36, or 46 for the

	alternate hosts, if configured.
i	Start the controller session with this AS/400 system: 0 = When the first NWS or PWS is powered on 1 = Immediately after the 5494 is powered on
u	When an indication is received from the AS/400 system that there are no active NWS sessions: 0 = Terminate the controller session unless this is the host to which we send alerts there is an active controller session with another host. 1 = Do not terminate the controller session.

| 6.2.17 Displaying LAN Card Permanent Address

| This request provides the LAN card permanent (universal) address. To
| display the LAN card permanent address press **Req**, type **216**, and press
| **Enter**. Press **Esc** to exit.

5494 Displays	Explanation
216 aaaaaaaaaaaa	216 Request code entered by user aaaaaaaaaaaa LAN card permanent address
216 *****	216 Request code entered by user ***** There is no LAN card in the 5494. Note: The LAN card address is displayed in token-ring address format for both token-ring and Ethernet cards.

| 6.2.18 Displaying Frame Relay Token-Ring Bridge Counters

| There are two requests to display the FR-TR bridge counters:

- | To display the FR-TR bridge counters for the token-ring port, press
| **Req**, type **217**, and press **Enter**.
- | To display the FR-TR bridge counters for the frame relay port, press
| **Req**, type **218**, and press **Enter**.

| Use the up and down arrow keys to scroll through the entries. Press **Esc**
| to exit.

| **Note:** If any counter is followed by a "+", it has wrapped.

5494 Displays		Explanation
21x-id cccccccc+		217 Request code for token-ring port bridge counters 218 Request code for frame relay port bridge counters id Outbound Frames Summary 1A - transmitted frames 1B - normal discards 1C - error discards Inbound Frames Summary 2A - received frames 2B - normal discards 2C - error discards Outbound Frames Transmitted 3A - All Routes Explorer (ARE) 3B - Spanning Tree Explorer (STE) 3C - Specifically Routed (SRF) Outbound Bytes Transmitted 4A - All Routes Explorer 4B - Spanning Tree Explorer 4C - Specifically Routed Outbound Frames Normal Discards 5A - Filtered Outbound Frames Error Discards 6A - Transmit delay exceeded 6B - Congestion 6C - Maximum frame size exceeded 6D - Target segment Inoperative 6E - Non-specific Inbound Frames Received 7A - All Routes Explorer 7B - Spanning Tree Explorer 7C - Specifically routed Inbound Frames Normal Discards 8A - Filtered 8B - Hop count exceeded Inbound Frames Error Discards 9A - Congestion 9B - Invalid route information 9C - SRF duplicate segment 9D - STE duplicate segment 9E - STE or ARE mismatch 9F - Non-specific cccccccc Counter + Overflow indicator (blank if no overflow)
217 *****		217 or 218 Request code entered by user
218 *****		***** FR-TR Bridge is not configured

6.2.19 Resetting Bridge Counters

| There are two requests to reset the FR-TR bridge counters to zero. To
| reset the FR-TR bridge counters for the token-ring port, press **Req**, type
| **219**, and press **Enter**.

| To reset the FR-TR bridge counters for the frame relay port, press **Req**,
| type **220**, and press **Enter**.

| The operator panel returns to displaying a blank panel or any current
| error messages after the operation is complete.

6.2.20 Restarting LAN Communication

To restart the Token-Ring or Ethernet adapter in the 5494 after it has been halted, press **Req**, type **230**, and press **Enter**. The panel displays message code 460 and SRC 540011, indicating that the restart is in progress. If this request is received when the LAN is not halted, it is ignored.

6.2.21 Enabling Workstation Concurrent Mode

To enable workstation concurrent mode so that concurrent mode information can be accessed from an attached workstation, press **Req**, type **290**, and press **Enter**. The test mode LED comes on.

Note: Concurrent mode information may also be accessed without enabling workstation concurrent mode by using the 5494 Utility Program and a previously configured password.

6.2.22 Disabling Workstation Concurrent Mode

To disable workstation concurrent mode, press **Req**, type **291**, and press **Enter**. The test mode LED goes off.

| 6.2.23 Copying 5494 Configuration or Filter Files from Diskette

Subtopics:

- [6.2.23.1 Configuration Data](#)
 - [6.2.23.2 Bridge Filter File](#)
 - [6.2.23.3 Placing the 5494 in Configuration Mode](#)
 - [6.2.23.4 Copying from Diskette](#)
-

| 6.2.23.1 Configuration Data

| You can copy a configuration file to 5494 storage. You can copy a backup
| configuration file created with the 5494 Utility Program to the 5494
| System Diskette only. In either case, the 5494 must be in configuration
| mode.

| **Note:** A backup configuration is used when a network fails and the
| customer requires a different configuration (replacing token-ring with
| SDLC for example) to continue operations. Using the backup configuration
| requires only that the 5494 be powered **ON** with the 5494 System Diskette
| that contains the configuration. The backup configuration is used from
| the system diskette in place of the one in 5494 permanent storage.

| 6.2.23.2 Bridge Filter File

| You can copy a filter file to the 5494 System Diskette. Or, you can copy
| from the 5494 System Diskette to another diskette. When you copy a filter
| file, the 5494 can be in normal mode or configuration mode.

| **Note:** The 5494 is unable to create files. If you want to copy the bridge
| filter file from the 5494 System Diskette to another diskette, a file with
| the name (5494FILT.DAT) must already exist on the second diskette. The
| 5494 will overwrite the file during the copy operation.

6.2.23.3 Placing the 5494 in Configuration Mode

The 5494 must be in configuration mode before you can copy the configuration data from diskette.

1. Remove the system diskette from the diskette drive.
2. Press the 5494 power push button to turn the 5494 **ON**.
3. When the message 003-02 appears on the panel, insert the system diskette.
4. To change the choice to 2, type **2** and press **Enter**.

When the Ready LED comes on, the test light will also be on, indicating that the 5494 is in configuration mode.

6.2.23.4 Copying from Diskette

- | To copy configuration data, press **Req**, type **300**, and press **Enter**.
- | To copy a bridge filter file, press **Req**, type **320**, and press **Enter**.
- | The following messages are displayed on the LCD as the 5494 copies the
| data. Follow the directions listed. To cancel the request, press **Esc**.

5494 Displays	Directions
301 *****	Insert the diskette containing the source configuration or filter file.
*****301*****	Copying of source information into 5494 memory in progress. The normal configuration file is also copied to permanent storage at this time.
302 *****	Copying of the source information into 5494 memory is complete. <ul style="list-style-type: none">° For configuration file copy, insert 5494 System Diskette.° For filter file copy, insert destination diskette.
*****302*****	Copying of configuration file or filter file to destination diskette in progress.
303 *****	Normal Configuration Copy to 5494 permanent storage and System Diskette is complete.
303 *****1	Backup Configuration Copy to 5494 System Diskette only is complete.
303 *****2	Bridge Filter File Copy to or from the 5494 System Diskette is complete.
Note: The following are error messages that may be displayed during configuration copy.	
304 *****	Configuration is being performed at a workstation. Copying of configuration is not allowed at this time. Press Esc to clear the LCD and end the request.

305 *****	The source configuration or bridge filter file is not on the diskette in the diskette drive. Press Clear and retry the diskette copy or press Esc to end the request.
306 *****	The 5494 is not in configuration mode. Press Esc to clear the screen, and then see the instructions at the beginning of this section to place the 5494 in configuration mode.
307 50000x	A disk error has occurred while trying to read or write to the diskette. Look up the error code in Topic 3, "5494 Message Codes and System Reference Codes (SRC8)." If the SRC is 500005, your diskette is write-protected. Move the tab on the diskette out of the write-protect position, and then press Clear . Reinsert the diskette and press Enter to continue. For all other errors, press Esc to cancel the request.
308 *****	You inserted the wrong diskette. Press Clear , remove the incorrect diskette, and then insert the correct system diskette.
309 *****	The bridge filter file cannot be copied to the diskette in the diskette drive because the file 5494FILT.DAT does not exist on the diskette. If you are copying the bridge filter file to the system diskette, make sure you have a 5494 FR-TR Bridge System Diskette, not a base system diskette. If you are copying the file to another diskette, create a file with that name on the diskette. Press Clear and retry the diskette copy or press Esc to end the request.
310 *****	The bridge filter file cannot be copied because the memory to hold the maximum file size is not available after 10 tries. Wait until the system is less busy and retry the operation.
311 *****	The bridge filter file on the diskette is larger than 10 000 bytes. The 5494 can read only a maximum of 10 000 bytes. If possible, remove some of the comments within the file and retry the operation.

6.3 Concurrent Mode Using the 5494 Utility Program

You can use the 5494 Utility Program on a PC or PS/2 computer to access concurrent mode information.

| **Note:** When you upgrade your 5494 with the Release 3.2 system diskette, it is required that you update your 5494 Utility Program to Release 3.2. Refer to the *IBM 5494 Remote Control Unit User's Guide* for instructions on how to install or update the 5494 Utility Program.

To use the 5494 Utility Program for concurrent mode, you need the following items:

Operating System	Requirements
DOS Version 3.3 or higher, or DOS/V (DOS/V is for double byte character set languages)	<p>PC Support/400 program, Version 1.2 or higher Client Access/400 Version 3 Release 1 or higher</p> <p>PC Support/400 or Client Access/400 program configuration file created for the 5494 during installation of the Utility Program. This file is used to establish the link between the 5494 and the Utility Program.</p> <p>A LAN or twinaxial connection between the 5494 and the PC or PS/2 computer running the 5494 Utility Program</p> <p>The Utility Program already installed on the PWS fixed disk.</p>
OS/2	<p>A Communications Manager configuration file created for the 5494 Utility Program</p> <p>A LAN or twinaxial connection between the 5494 and the PC or PS/2 computer that is running the 5494 Utility Program</p>

The 5494 Utility Program has a remote access function that allows it to communicate with any 5494 within the APPN network. The instructions that follow assume you are using a PWS that is attached to the 5494. For instructions on using the 5494 Utility Program remote access function, refer to the *IBM 5494 Remote Control Unit User's Guide*.

To use the 5494 Utility Program to access concurrent mode, follow these steps:

1. Are you planning to use the password defined during configuration to access concurrent diagnostics?

- Yes-- Go to step [3](#).

- No-- Continue with step [2](#).

2. On the 5494 keypad, press **Req**, type **290**, and press **Enter**.

3. Determine the operating system that is installed on the PC or PS/2 computer that will be running the Utility Program.

- If the operating system is DOS, go to step [6](#).
- If the operating system is OS/2, continue with step [4](#).

4. Activate Communications Manager with the configuration file that was configured to run the 5494 Utility Program. This was specified when the 5494 Utility Program was installed.

5. Start up the OS/2 Full Screen.

6. Type **c:** (where **c:** represents the PWS fixed disk on which the Utility Program is installed) and then press **Enter**.

Note: If the Utility program has been installed on a fixed disk other than c, replace the drive letter with the letter of the fixed disk.

7. Type **cd\5494up**, and then press **Enter**.

8. Type **5494up**, and then press **Enter**.

9. Press **Enter** to clear the IBM logo.

10. On the Utility Program main menu, select Concurrent Diagnostics. Enter the password if required. Follow the menu options provided by the program. If you need assistance while using the Utility Program, refer to the program's online help.

7.0 Topic 7. Concurrent Mode from an NWS (Online)

Subtopics:

- [7.1 Introduction](#)
- [7.2 Common Data Fields](#)
- [7.3 C1 Screen](#)
- [7.4 C2 Screen](#)
- [7.5 C3 Screen](#)
- [7.6 C4 Screen](#)
- [7.7 C5 Screen](#)
- [7.8 C6 Screen](#)
- [7.9 C7 Screen](#)
- [7.10 C8 Screen](#)
- [7.11 C9 Screen](#)
- [7.12 CA Screen](#)

- [7.13 CB Screen](#)
-

7.1 Introduction

This method of accessing concurrent mode formats 5494 internal information for display at an attached NWS. When you start concurrent mode correctly, customer applications continue to operate normally at every workstation except the one you are using.

Lines 1 through 5 and part of line 24 of each concurrent mode screen contain the configuration information. The contents of these fields are defined in "[Common Data Fields](#)" in topic [7.2](#). The contents and format of data in lines 7 through 23 vary, depending on which screen you select.

Screen Displays

C1

The contents of the twinaxial interface error counters and the error log buffer.

C2

The contents of the communication and statistical counters, communication state byte, SNA state byte, and, if concurrent host attachment is configured, the status of all AS/400 systems.

C3

128 consecutive bytes of data from the 5494 storage. You can select any starting address from 00 0000 to 10 FFFF for any virtual group.

C4

The contents of the 5494 trace buffer and is used to start and stop traces.

C5

Keyboard code information for all possible workstation addresses. In addition, the screen presents the vital product data for each workstation that is turned on and responding to polls from the 5494.

C6

The 5494 error log.

C7

Identifies all code corrections that currently reside in the 5494 storage.

C8

The status of the LAN Gateway, including error counters and Token-Ring routing information.

C9

If using the LAN or frame-relay AS/400 configuration, C9 displays the status of the AS/400 system. If using a LAN Gateway configuration, C9 also displays the status of the active LAN workstations.

| CA

If the 5494 is configured for concurrent host attachment, CA displays both the configured host and the active host for each possible shared session for each NWS address.

| CB

If the 5494 is configured for frame relay token-ring bridge, CB displays bridge configuration information and bridge counters.

Subtopics:

- [7.1.1 Using Concurrent Mode at an NWS](#)
-

7.1.1 Using Concurrent Mode at an NWS

Do the following to start concurrent mode:

Attention: It is important to enter concurrent mode correctly, as described in the following procedure. If not, **all sessions can be destroyed**.

Note: Concurrent mode cannot be entered when the 5494 is in configuration mode.

1. Is the 5494 operational, the 5494 Ready LED lit, and the Test Mode LED off?

- If the 5494 is already operational, go to step [3](#).
- If it is not, continue with step [2](#).

Note: It is not necessary to turn the 5494 power **OFF (0)** and back **ON (I)** to enter concurrent mode.

2. Make sure the 5494 system diskette is in the diskette drive, and then turn the 5494 power **ON (I)**. Wait for the Ready LED to come on.

3. At the 5494 keypad, press **Req**, type **290**, and press **Enter**. The Test Mode LED comes on.

4. Select an attached workstation. Use an NWS or a PWS running 5250 emulation.

End any job in progress, log off the application, and vary off (end the AS/400 system session) that workstation. If it is not convenient to vary off the workstation, wait at least 1 minute after logging off the application to continue with this procedure.

5. At the workstation, enter the Test Request key sequence (see [Appendix D, "Key Sequences"](#)). Press the **C** key.

A diagnostic display screen appears containing a screen number (C1) in the lower left-hand corner of the display.

6. The cursor is located under the screen number field. Change the number to the desired screen number by using the Up Arrow or Down Arrow key.

7. Press **Enter** to display the screen.

The status information on the screen is updated each time you press **Enter**.

Repeat step [6](#) and step [7](#) to select another display screen.

8. Restart the session by pressing **Error Reset** twice. Turn the workstation power switch **OFF (0)**. Wait 30 seconds, and then turn the workstation power switch **ON (I)**. If necessary, vary on the display at the AS/400 system. If the 5494 is online, a sign-on screen should appear within a few seconds.

9. To exit concurrent mode and turn off the Test Mode LED, press **Req**, type **291**, and press **Enter** at the 5494 operator panel.

7.2 Common Data Fields

Display lines 1 through 5 and part of line 24 of each concurrent mode screen contain the same data fields. [Figure 13](#) shows the format of these fields.

A	AAA	BB	CC	DD	(communication-mode-dependent fields)
B	NN	PP	U	VVVVV	QQQQQQQQ.QQQQQQQQ.RRRRRRRR.RRRRRRRR.SSSSSSSS.SSSSSSSS.TTTTTTTT
C	F.F	G.G	II	KK	WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
D	MM	XX	YY	ZZ	111111111111 22 33 44 55 66 77 88 9999

E	CX				F P P

Figure 13. Data Fields Supplied on All Concurrent Mode Screens

Notes:

1. Screen-specific information is displayed in lines 6 through 23.
2. Fields **B** through **F** are explained beginning in topic [7.2](#).

A

Communication Parameters (Line 1)

The contents of this line depend on the communication mode used.

The contents of each field in all communication modes are defined as follows:

- Field AAA is the storage size in megabytes.
- Field BB is the number of ports and is set to 04 or 08.
- Field CC is one of the following communication modes:

00 = SDLC
01

	= X.25
02	= X.21 switched
03	= X.21 leased
04	= Token-Ring upstream
05	= Ethernet upstream
06	= Frame Relay

- Field DD is the current AS/400 system (01-04) selected.

The remaining fields are different for each communication mode.

The definition of each bit or subfield is shown in the table for the communication mode you are using.

SDLC	See Table 37
X.21 Leased	See Table 37
X.25	See Table 38
X.21 Switched	See Table 39
Token Ring	See Table 40
Ethernet	See Table 41
Frame Relay	See Table 42

Communication-mode-dependent fields in row 1 for SDLC or X.21 Leased communications mode:

AAA	BB	CC	DD	EE	F	G	H	I	J	K	L	NN
-----	----	----	----	----	---	---	---	---	---	---	---	----

Table 37. Communication Configuration for SDLC or X.21 Leased	
Positions	Function
EE	SDLC station address
F	0 = Leased 1 = Switched 2 = Switched, V.25 bis auto-dial
G	0 = Half-duplex 1 = Duplex
H	0 = Multipoint 1 = Point-to-point
I	0 = NRZI 1 = NRZ
J	0 = DTR 1 = CDSTL
K	0 = Do not send pad 1 = Send pad
L	0 = Local loopback not supported 1 = Local loopback supported
NN	V.25 bis call connected timeout (01-FF)

Communication-mode-dependent fields in row 1 for X.25 communications mode:

AAA	BB	CC	DD	EE	FF	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	XX	YY
-----	----	----	----	----	----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	----	----

Table 38. Communication Configuration for X.25

Positions	Function
EE	LLC station address
FFF	Default logical channel identifier
G	Sequence numbering 0 = Modulo 8 1 = Modulo 128
H	Packet window size 2-7 for modulo 8 2-F for modulo 128
I	Link window size (1-7)
J	Packet size in bytes 0 = 64 1 = 128 2 = 256 3 = 512 4 = 1024
K	Virtual circuit type 0 = Multiple PVCs, SVCs, or SVC call allowed 1 = PVC only 2 = SVC answer only
L	0 = Flow control not permitted 1 = Flow control permitted
M	0 = Manual options not permitted 1 = Manual options permitted
N	0 = Local loopback not supported 1 = Local loopback supported
O	0 = Do not accept reverse charge 1 = Accept reverse charge
P	LLC selection 0 = QLLC 1 = ELLC
Q	1 = Attached to U.K. Switch Stream or Telenet-type network
R	Link initiation 0 = Link initiated by 5494 or network 1 = Link initiated by network only
S	0 = 1988 subscription 1 = 1984 subscription 2 = 1980 subscription
T	Diagnostic codes 0 = 1984/1988 SNA 1 = 1984/1988 ISO 2 = 1980 SNA
XX	Retry counter (00-FF)
YY	Retry interval (00-1C)

Communication-mode-dependent fields in row 1 for X.21 Switched communication mode:

AA	BB	CC	DD	EE	FFF	G	HH	I	J	KK	LL	MM	NN	OO	PP	QQ	RR
----	----	----	----	----	-----	---	----	---	---	----	----	----	----	----	----	----	----

Table 39. Communication Configuration for X.21 Switched

Positions	Function
EE	SDLC station address
FFF	Access code
G	Dial digit format (0-F)
HH	SHM recall counter (00-FF)
I	SHM recall delay time (1-F)

J	0 = SHM recall address call support 1 = SHM recall direct call support
KK-RR	Retries attempted for these call progress signals ('A'X indicates no entry)

Row 1 for Token-Ring communication mode:

AAA BB CC DD EEEEEEEEEE FF GGGGGGGGGG HH II JJ KK LL MM NN OO

Table 40. Communication Configuration for Token Ring	
Positions	Function
EEEEEEEEE	AS/400 system Token-Ring address
FF	AS/400 system SAP
GGGGGGGGGG	5494 Token-Ring address
HH	5494 SAP
II	Token-Ring response timer (T1) in seconds - see Note
JJ	Token-Ring inactivity timer (Ti) in seconds
KK	Token-Ring receiver acknowledgment timer (T2) in milliseconds
LL	Token-Ring retry count (N2)
MM	Token-Ring maximum out (TW)
NN	Token-Ring maximum in (N3)
OO	Adapter rate <ul style="list-style-type: none"> 04 = 4 Mbps 16 = 16 Mbps

Note: A value of * indicates that the 5494 calculates this value based on the number of bridges in the connection. The C9 screen shows the current value.

Row 1 for Ethernet communication mode:

AAA BB CC DD EEEEEEEEEE FF GGGGGGGGGG HH II JJ KK LL MM NN OO PPPP S
--

Table 41. Communication Configuration for Ethernet	
Positions	Function
EEEEEEEEE	AS/400 system Ethernet address (as transmitted)
FF	AS/400 system SAP
GGGGGGGGGG	5494 Ethernet address (as transmitted)
HH	5494 SAP
II	Ethernet response timer (T1) in seconds
JJ	Ethernet inactivity timer (Ti) in seconds
KK	Ethernet receiver acknowledgment timer (T2) in milliseconds
LL	Ethernet retry count (N2)
MM	Ethernet maximum out (TW)

NN	Ethernet maximum in (N3)
OO	Ethernet adapter rate 10 = 10 Mbps
PPP	Ethernet media type 10b2 = 10BASE2 10b5 = 10BASE5 10bt = 10BASE-T
S	Ethernet frame format 0 = IEEE 802.3 1 = DIX version 2.0

Row 1 for frame relay communication mode:

AAA BB CC DD EEE F G H I J K L MM NN O PP QQ RR SS TT UU VV WW X

Table 42. Communication Configuration for Frame Relay	
Positions	Function
EEE	Data Link Connection Identifier (DLCI)
F	0 = Leased
G	1 = Duplex
H	1 = Point-to-Point
I	Zero Insertion: 0 = NRZI 1 = NRZ
J	0 = DTR
K	0 = Do not send pad
L	0 = No local loopback
MM	AS/400 SAP
NN	5494 SAP
O	LMI Mode: 0 = NO LMI 1 = ANSI T1.617 Annex D 2 = CCITT Q.933 Annex A
PP	Polling interval in seconds (POLLITV)
QQ	Full inquiry interval in cycles (FULLINQITV)
RR	Response timer (T1) in seconds
SS	Inactivity timer (Ti) in seconds
TT	Receiver acknowledgment timer (T2) in milliseconds
UU	Retry count (N2)
VV	Maximum frames out (TW)
WW	Maximum frames in (N3)
X	FR-TR bridge: 0 = Not configured for FR-TR bridge 1 = Configured for FR-TR bridge

A AAA BB CC DD (communication-mode-dependent fields)
B NN PP U VVVVV VQQQQQQ.QQQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSS.SSSSSSS TTTTTTT
C F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
D MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999



Figure 14. Data Fields Supplied on All Concurrent Mode Screens (Continued)

B Network Configuration

This line contains network configuration information. The contents of each field on this line are defined as follows:

- Field NN is the logical connection retry counter.
- Field PP is the logical connection retry interval.
- Field U is the continuous retry field.

0 =	Do not activate continuous retries after retry count expires
1 =	Activate continuous retries at 10-minute intervals after retry count expires

- Field VVVVV is the 5494 ID configured by the user or * if none is configured.
- Field QQQQQQQ.QQQQQQQ is the network qualified logical unit (LU) name for the 5494.
- Field RRRRRRR.RRRRRRR is the network qualified control point (CP) name for the 5494.
- Field SSSSSSS.SSSSSSS is the network qualified LU for the active AS/400 system.
- Field TTTTTTTT is the mode name.

C 5494 Specifications

This line contains 5494 hardware and code specifications.

- Field F.F is the release number of the ROS.
- Field G.G is the release number of the system diskette.
- Field II is the data level of the correction file.
- Field KK is the communication cable type ID.

00	= X.21
01	= V.35
10	= EIA 232D
11	= No cable attached or cable attached is not valid.

Note: If Token Ring or Ethernet is used for AS/400 system communication, this panel will show 11 (no cable attached).

- Field WW-WWWWW is the 5494 serial number.
- Field ZZZZ ZZZZ ZZZZ ZZZZ is the IDs of the adapters in the 5494 (slots 01-04).

FFFF =	No adapter in the slot
E00F =	Token-Ring adapter
FEE6 =	Ethernet adapter
8FF6 =	host-twinaxial adapter.

- Field J is the controller session initiation with the AS/400 system.

0 =	Start the controller session when the first NWS or PWS powers on
1 =	Start the controller session immediately.

- Field L is the controller session termination with the AS/400 system.

0 =	Terminates the controller session when an indication is received from the AS/400 system that there are no active NWS or PWS sessions.
1 =	Do not terminate the controller session when the AS/400 system indicates no sessions are active.

- Field M is the concurrent host attachment.

0 =	Concurrent host attachment is not configured.
1 =	Concurrent host attachment is configured.

- Field NNN is the concurrent host attachment printer timeout in seconds.

If configured for concurrent host attachment, this is the printer timeout value which represents the number of seconds a 5494 waits before accepting a print job from a different host. Zero indicates printer sharing is disabled.

- | Field O is the AS/400 date and time field.

| 0 =
Do not set the 5494 date and time to the primary AS/400 date and
| time.

| 1 =
Set the 5494 date and time to the primary AS/400 date and time.

D Workstation Information

This line contains information about workstations that are attached using twinaxial and LAN cabling. It also contains LAN Gateway information, defined as follows:

- Field MM is the maximum number of workstations supported with the current configuration.
- Field XX is the LAN Gateway status.

00 = Not configured
01 = Token Ring configured
02 = IEEE 802.3 Ethernet configured
03 = DIX Version 2.0 Ethernet configured

Note: The following fields display if a LAN Gateway is configured.

- Field YY is the LAN Gateway status.

00 = Closed (inactive)
01 = Open (active).

- Field ZZ is the LAN speed.

04 = 4 Mbps (Token Ring)
10 = 10 Mbps (Ethernet)
16 = 16 Mbps (Token Ring).

- Field 111111111111 is the address of the 5494 on the LAN Gateway (as transmitted).

- Field 22 is the 5494 LAN Gateway SAP.
- Field 33 is the LAN Gateway response timer (T1) in seconds.
- Field 44 is the LAN Gateway inactivity timer (Ti) in seconds.
- Field 55 is the LAN Gateway receiver acknowledgment timer (T2) in milliseconds. (T2).
- Field 66 is the LAN Gateway retry count (N2).
- Field 77 is the LAN Gateway maximum out (TW).
- Field 88 is the LAN Gateway maximum in (N3).
- Field 9999 is the Ethernet media type:

10b2	= 10BASE2
10b5	= 10BASE5
10bt	= 10BASE-T

Note: Field 9999 does not display for Token Ring.

Note: The fields on the previous topics are from the configuration information.

E Screen Selection Field

This field allows you to select which concurrent mode screen the 5494 displays. When you first enter concurrent mode, screen C1 appears on the display station with the cursor positioned below the second character of this field. Press **Enter** to display the data on this screen. To select a different screen, use the Cursor Up or Cursor Down key to change the screen number and then press **Enter**. If you do not change the value of the screen selection field, the 5494 updates all fields in the current screen each time you press the Enter key.

F Printer Selection Field for Concurrent Mode Screen Printing

This field contains the port (0-7) and station (0-6) address of the printer selected for the copy to printer function for concurrent mode screen printing. The default value of this field is determined by the value selected for the P field during CSU. If no printer was selected at that time, ' - ' appears on the screen. In either case, you can use the Cursor Up or Cursor Down key to change the printer address contained in this field. However, if you press the Print key with no printer selected, the 5494 uses the first printer available (not in session) as the workstations are polled to print out the contents of the concurrent mode screen currently being displayed.

7.3 C1 Screen

The C1 screen displays the contents of the error log buffer and the twinaxial interface error counters. See [Figure 15](#).

The screenshot shows the C1 screen with the following data:

```
AAA BB CC DD (communication-mode-dependent fields)
NN PP U VVVVV QQQQQQQQ.QQQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSSS.SSSSSSSS TTTTTTTT
F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999
-----
A LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS
LL EEEE SSSSSSSSS
LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS
LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS
LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS
B LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS
LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS
LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS
LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS LL EEEE SSSSSSSSS
LL FFFF FFSSSSSSSS
C AAAA AAAA AAAA AAAA BBBB BBBB BBBB BBBB
AAAA AAAA AAAA AAAA BBBB BBBB BBBB BBBB
-----
C1
```

Figure 15. C1 Screen

A B Error Log Buffer

The error log buffer section of the C1 screen lists all errors currently stored in the 5494 error log buffer. The oldest entry is the first entry in the first column. The error log buffer section is divided into two blocks by a dashed line. All entries above the dashed line (**A**) have been sent to the AS/400 system. All entries below the dashed line (**B**) have not been sent to the AS/400 system. Entries are sent to the AS/400 system when the 5494 is varied off or error counters overflow.

Each entry consists of three fields, described as follows:

- Field LL is a 1-byte logical session ID that indicates the session in which the error was detected. A value of 00 indicates the 5494 for some SRCs.

Note: For SRCs 42xxxx, 43xxxx, and 44xxxx, the high two bits of the LL field indicate which AS/400 system experienced the error:

- 00 = H1, 40 = H2, 80 = H3, and C0 = H4.
- Field EEEE is a 2-byte SRC. The first digit of 2-byte SRCs is 0.
- Field FFFF FF is a 3-byte SRC. The first digit of 3-byte SRCs is not 0.
- Field SSSSSSSSS is the sense byte field. The number of sense bytes displayed in this field depends on the SRC.

Figure 16. C2 Screen for SDLC, X.25, and X.21

A Communication and Statistical Counters

This section of the C2 screen displays the contents of communication and statistical counters. The counters identified by AA are 1-byte communication counters (60 through 6D). The counters identified by BBBB BBBB are 4-byte statistical counters (6E and 6F). See ["Communication Error Counters \(60 through 6D\)" in topic B.9](#) and ["Statistical Counters \(6E and 6F\)" in topic B.10](#) for more information on these counters.

B The 5494 connection number.

C The AS/400 system connection number.

D Communication State Bytes

The function of each bit in this field is shown in [Table 43](#) for SDLC and X.21 leased, [Table 44](#) for X.25, and [Table 45](#) for X.21 Switched.

Table 43. State Byte for SDLC or X.21 Leased	
Bit	Function
0	1 = Address compared
1	1 = Frame received with good FCS
2	1 = XID frame received
3	1 = SNRM received
4	0 = NDM entered 1 = NRM entered
5-6	Reserved

7	0 = NDM is actual state 1 = NRM is actual state
---	--

Note: This byte is reset when a correct address is received while in disconnect mode.

Table 44. State Byte for X.25	
Bit	Function
0	1 = Address compared
1	1 = Frame received with good FCS
2	1 = Link activated (UA received for SABM sent)
3	1 = Packet level restarted (restart confirmation was received for restart request sent)
4	1 = Data transfer entered
5-6	Reserved
7	1 = LLC information transfer entered

Note: This byte is reset when a correct address is received while in disconnect mode.

Table 45. State Byte for X.21 Switched	
Bit	Function
0	1 = Call sequence started
1	1 = Ready for data state entered (State 12; SDLC mode)
2	1 = Address compared
3	1 = Frame received with good FCS
4	1 = XID frame received
5	1 = SNRM received
6	1 = NRM entered
7	0 = NDM is actual state 1 = NRM is actual state

Note: Bits 1 through 6 are reset when a call is initiated (whether incoming or outgoing).

E

SNA State Byte (for all 3 protocols)

The function of each bit in this field is shown in [Table 46](#).

Table 46. SNA State Byte	
Bit	Function
0	1 = ACTLU received
1	Reserved
2	1 = SNA LU 4 or 7 BIND complete
3	1 = Accepting workstation data streams
4	1 = EC load in progress
5	1 = EC load LU state flag
6	1 = LU 6.2 controller session active
7	1 = Primary host download complete

F

Communication Interface Register

The data contained in the communication interface register depends on the physical interface used. The bit definitions for an EIA 232D interface are shown in [Table 47](#). The bit definitions for an X.21 interface are shown in [Table 48](#).

Table 47. Communication Interface Register for EIA 232D Interface	
Bit (1)	Function
0	RD
1	Reserved
2	RSET
3	TSET
4	DSR
5	RFS
6	CD
7	CI
8	TD
9	DTR/CDSTL
10	RTS
11	Local loopback
12	Reserved
13	Reserved
14-15	Reserved

Note:

1. 0 in a bit position indicates an active signal; 1 indicates an inactive signal.

Table 48. Communication Interface Register for X.21 Physical Interface	
Bit (1)	Function
0	Receive data (RD)
1	Reserved
2	Network clock
3	Network clock
4	Reserved
5	Reserved
6	Indicate (I)
7	1 = Transmit wait for network ready
8	Transmit data (TD)
9	Reserved
10	Control (C)
11	Reserved
12	1 = DCE not ready
13	Reserved
14	1 = Wait for proceed to select
15	Reserved

Note:

1. Unless otherwise indicated, a 0 in a bit position indicates an active or **on** signal; a 1 indicates an inactive or **off** signal.

| G

Host Configuration Information and Attachment Status

This section of the C2 screen contains configuration and status information for the four possible hosts that can be configured on the 5494. The status information is useful when configured for concurrent host attachment.

Field Definition

H1-H4

This field represents the numbers of the configurable hosts. The H1 through H4 field appears on the screen. However, information appears in the fields following the H1-H4 field only if that host is configured.

P

This field identifies the host status:

- 0 = Alternate host
- 1 = Primary host
- 2 = Alternate host currently receiving alerts while the primary is not active.

X

This field indicates the status of the link. This field is set to 1 for only one host. The 5494 attempts to activate the primary host first. If unsuccessful and configured for concurrent host attachment, it then attempts to activate the alternate hosts one at a time.

- 1 = The first ALS has been contacted. It may now be possible to link to the other hosts through this ALS.
- 0 = This is not the first ALS contacted. If all hosts have this field set to 0, there is currently no active link.

A

This field indicates the host communication status:

- 0 = This AS/400 system has not been contacted.
- 1 = This AS/400 system has been contacted.

S

This field indicates the controller session status:

- 0 = No controller session is active with this host.
- 1 = The controller session is active with this host.

J

This field indicates the controller session initiation for this host:

- 0 = Start the controller session when the first NWS (or PWS if this is the primary host) powers on.
 1 = Start the controller session immediately without waiting for an active NWS.

L

This field indicates the controller session termination for this host:

- 0 = Terminate the controller session when an indication is received from the AS/400 system that there are no active NWS sessions.
 1 = Do not terminate the controller session when the AS/400 system indicates no sessions are active.

Note: The controller session to the host which receives 5494 alerts is not ended until no NWSs or PWSs are in session with any host.

UUUUUUUUU

This field identifies the LU name for this host.

| VVVVVVVVV

This field identifies the network ID for this host.

| WWWWWWWWW

This field identifies the 5494 network ID for this host.

| XXXXXXXXX

This field identifies the mode name for this host.

```

AAA BB CC DD (communication-mode-dependent fields)
NN PP U VVVVVV QQQQQQQQ.QQQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSSS.SSSSSSSS TTTTTTTT
F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999
-----
```

A EEEEEEEE QQ FFFFFFFF QQ GGGGGGGG QQ HHHHHHHH QQ IIIIIIII QQ
 JJJJJJJJ QQ KKKKKKKK QQ LLLLLLLL QQ MMMMMMMM QQ NNNNNNNN QQ

B PPPP PPPP PPPP PPPP PPPP PPPP PPPP PPPP

1111 0XX0 1X11 11XX

C **D**

G H1: P X A S J L UUUUUUUU VVVVVVVV WWWWWWWW XXXXXXXX
 H2: P X A S J L UUUUUUUU VVVVVVVV WWWWWWWW XXXXXXXX
 H3: P X A S J L UUUUUUUU VVVVVVVV WWWWWWWW XXXXXXXX
 H4: P X A S J L UUUUUUUU VVVVVVVV WWWWWWWW XXXXXXXX

C2

Figure 17. C2 Screen for Token-Ring AS/400 Communication

A**Token-Ring Communication and Statistical Counters****Field Definition**

EEEEEEEE	The line error count.
FFFFFFF	The burst error count.
GGGGGGGG	The abort delimiter.
HHHHHHHH	The receive congestion count.
IIIIIII	The frequency error count.
JJJJJJJ	The interval error count.
KKKKKKKK	The access control (a/c) error count.
LLLLLLL	The lost frame count.
MMMMMM	The frame copy error count.
NNNNNNNN	The token error count.
QQ	Contains the numeric overflow from the fields that precede it.

B

Information about routing to the active AS/400 system.

C**Token-Ring State Byte**

Table 49. Token-Ring State Byte	
Bit	Function
0-5	Reserved
6	Token-Ring status 0 = Closed 1 = Open
7	Token-Ring speed 0 = 4 Mbps 1 = 16 Mbps

D**SNA State Byte**

Table 50. SNA State Byte	
Bit	Function
0	1 = ACTLU received
1	Reserved
2	1 = SNA LU 4 or 7 BIND complete
3	1 = Accepting workstation data streams
4	1 = EC load in progress
5	1 = EC load LU state flag
6	1 = LU 6.2 controller session active
7	1 = Primary host download complete

| G

Host Configuration Information and Attachment Status

See Host Configuration Information on page [7.4](#).

```

AAA BB CC DD (communication-mode-dependent fields)
NN PP U VVVVV QQQQQQQQ.QQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSSS.SSSSSSSS TTTTTTTT
F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999
-----
```

A EEEEEEEE QQ FFFFFFFF QQ

XXXX XXOX 1X11 11XX

C D

```

G H1: P X A S J L UUUUUUUU VVVVVVVV WWWWWWWW XXXXXXXX
H2: P X A S J L UUUUUUUU VVVVVVVV WWWWWWWW XXXXXXXX
H3: P X A S J L UUUUUUUU VVVVVVVV WWWWWWWW XXXXXXXX
H4: P X A S J L UUUUUUUU VVVVVVVV WWWWWWWW XXXXXXXX
```

C2

Figure 18. C2 Screen for Ethernet AS/400 Communication

A

Ethernet Communication and Statistical Counters

Field Definition

EEEEEEEEE

The transmit error count.

FFFFFFFFFF

The receive congestion count.

QQ

Contains the numeric overflow from the fields that precede it.

C

Ethernet State Byte

Table 51. Ethernet State Byte	
Bit	Function
0–5	Reserved
6	Ethernet status 0 = Closed 1 = Open
7	Reserved

D

SNA State Byte

Table 52. SNA State Byte	
Bit	Function
0	1 = ACTLU received
1	Reserved
2	1 = SNA LU 4 or 7 BIND complete
3	1 = Accepting workstation data streams
4	1 = EC load in progress
5	1 = EC load LU state flag
6	1 = LU 6.2 controller session active
7	1 = Primary host download complete

| G

Host Configuration Information and Attachment Status

See Host Configuration Information on page [7.4](#).

```

NN PP U VVVVV QQQQQQQQ.QQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSS.SSSSSSS TTTTTTT
F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999
-----
A EEEEEEEE FFFFFFFF GGGGGGGG HHHHHHHH IIIIIIII
JJJJJJJJ KKKKKKKK LLLLLLLL MMMMMMMM NNNNNNNN
OOOOOOOO PPPPPPPP

1111 0XX0 1X11 11XX X1XX 1111 X111 10XX

D E F

G H1: P X A S J L UUUUUUUU VVVVVVVV WWWW WWW XXXXXXXX
H2: P X A S J L UUUUUUUU VVVVVVVV WWWW WWW XXXXXXXX
H3: P X A S J L UUUUUUUU VVVVVVVV WWWW WWW XXXXXXXX
H4: P X A S J L UUUUUUUU VVVVVVVV WWWW WWW XXXXXXXX

C2

```

Figure 19. C2 Screen for Frame Relay AS/400 Communication

A Frame Relay Communication and Statistical Counters

Field Definition

EEEEEEEEE	LMI timeout count
FFFFFFFFF	LMI sequence error count
GGGGGGGGG	LMI protocol error count
HHHHHHHHH	PM DSR error count
IIIIIII	PM CTS error count
JJJJJJJJ	Aborted frames
KKKKKKKK	FCS errors
LLLLLLL	Residue errors
MMMMMMMM	Overruns
NNNNNNNN	Underruns
OOOOOOOO	No receive buffers
PPPPPPPP	Misaddressed frames

D Frame Relay State Byte

Table 53. Frame Relay State Byte	
Bit	Function
0–5	Reserved
6	Frame Relay adapter status 0 = Closed 1 = Open
7	Reserved

E

SNA State Byte

The function of each bit in this field is shown in [Table 54](#).

Table 54. SNA State Byte	
Bit	Function
0	1 = ACTLU received
1	Reserved
2	1 = SNA LU 4 or 7 BIND complete
3	1 = Accepting workstation data streams
4	1 = EC load in progress
5	1 = EC load LU state flag
6	1 = LU 6.2 controller session active
7	1 = Primary host download complete

F

Communication Interface Register

See Tables [47](#) and [48](#) starting on page [7.4](#).

G

Host Configuration Information and Attachment Status

See Host Configuration Information on page [7.4](#).

7.5 C3 Screen

The C3 screen displays 128 bytes of data from dynamic RAM (DRAM). The C3 screen is shown in [Figure 20](#). The screen consists of the virtual group number (**A**), an address field (**B**) followed by data displayed in hexadecimal code (**C**) and EBCDIC (**D**). The display of data begins with the storage address entered in field **E** using the cursor control keys. The storage address is made up of a virtual group number, a segment number and an offset. You can scroll the display to the next 128 bytes by moving the cursor to the dash (-) at field **F** and pressing the Up Arrow or the Down Arrow key.

```

AAA BB CC DD (communication-mode-dependent fields)
NN PP U VVVVV QQQQQQQQ.QQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSS.SSSSSSS TTTTTTT
F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999
-----
          VV A
      B       C       D
EEEEEE 00000000 00000000 00000000 00000000 .....
EEEEFE 00000000 00000000 00000000 00000000 .....
EEEFOE 00000000 00000000 00000000 00000000 .....
EEEF1E 00000000 00000000 00000000 00000000 .....
EEEFP2E 00000000 00000000 00000000 00000000 .....
EEEFP3E 00000000 00000000 00000000 00000000 .....
EEEFP4E 00000000 00000000 00000000 00000000 .....
EEEFP5E 00000000 00000000 00000000 00000000 .....
          E       F
C3  VV  0E  EEEE -

```

Figure 20. C3 Screen

7.6 C4 Screen

The C4 screen permits you to examine data flows inside the 5494. These flows are tagged by trace entries and pointers stored in a trace buffer. You can trace the following types of data:

- Task Control Blocks (TCBs). TCB entries control data flow through the 5494.
- Twinaxial Control Blocks. These blocks control data flow to and from a 5250 workstation.
- Communication Control Blocks. These blocks govern data flows to or from the AS/400 system.

Note: Token-Ring communication is not traced.

- Input/Output Blocks (IOBs). IOBs contain data associated with a TCB, a communication control block, or a twinaxial control block.
- Special Conditions Block. Special conditions blocks are constructed by the system code to trace various aspects of internal operation.

The specific format of a C4 screen depends upon the particular type of trace data being displayed. Detailed instructions for selecting a particular type of trace test is supplied by your support structure as needed during problem isolation. The C4 screen shown in [Figure 21](#) is an unformatted TCB trace display.

```

AAA BB CC DD (communication-mode-dependent fields)
NN PP U VVVVV QQQQQQQQ.QQQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSSS.SSSSSSSS TTTTTTTT
F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
    MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999
-----
A --NNNN--TT  LLLL

0000      00000000 00000000 00000000 00000000 ... .....
0010      00000000 00000000 00000000 00000000 ... .....
B 0020      00000000 00000000           ...          

0000      00000000 00000000 00000000 00000000 ... .....
0010      00000000 00000000 00000000 00000000 ... .....
C 0020      00000000 00000000 00000000 00000000 ... .....

C4 0 - 0 0 0 0 0000 0 0000000000 x00x00x00x00x00x00 00 00 0
----- D -----

```

Figure 21. C4 Screen

A Trace Type ID

The first line of a trace entry indicates the type of trace being done as follows:

- Field NNNN is a 2-byte code for an entry number associated with the current trace entry. The oldest entry is X'0001'.
- Field TT is a 1-byte code for a trace entry type:

```

00 =          TCB trace entry
01 =          special conditions trace entry
02 =          transmit communication trace entry
03 =          receive communication trace entry
04 =          twinaxial control block trace entry for transmit
05 =          twinaxial control block trace entry for receive
06 =          twinaxial control block trace entry containing a keyboard scan code.

```

```
| 80 =          frame relay core services trace entry
```

```
| 81 =          TOK5494 trace entry
```

```
| 82 =          SRB/Bridge Manager trace entry
```

- Field LLLL is a 2-byte code for the length of the trace entry in bytes.

B**Trace Entry**

The specific trace entry displays as the second field in an unformatted trace screen. The location and size of this field depend on the type of trace being displayed:

- A TCB entry supplies the following information:
 - A 32-byte block of data
 - A 2-byte return code sent to the task dispatcher
 - A 2-byte time code that indicates when the task assumed control over the bus
 - A 2-byte time code that indicates when the task returned control to the task dispatcher
 - A 2-byte absolute address assigned to the TCB.
- A special conditions trace entry consists of a 2-byte field that is presented immediately following the trace entry size.
- A twinaxial control block trace entry consists of a 16-byte block of data presented on the line below the trace entry header.

C**IOB**

If test C4 is used to display a TCB, a twinaxial control block trace entry, or a communication trace, the trace buffer can contain one or more IOBs. When present, this data displays in a block below the trace entry. If the trace is set to trace the twinaxial command buffer, then this data appears in this field when tasks are sent to the LINKWID.

D**Trace Control Switches**

Flags that control operation of the trace test are listed on line 24 of the display. These flags are defined in [Table 55](#).

Table 55. Trace Control Switches	
Position	Function
1	Master switch 0 = Disable tracing 1 = Enable tracing
2	Dummy field (-) for scrolling entries To scroll, place the cursor under the - and use the up and down error keys to scroll.

	Note: The dash (-) in field position 2 is not always displayed.
3	TCB trace switch 0 = Do not trace TCBs or their IOBs 1 = Trace TCBs 2 = Trace TCBs and their IOBs 3 = Trace TCBs, based on Local Station Address (LSA) 4 = Trace TCBs and their IOBs, based on LSA 5 = Trace TCBs and IOBs/twinaxial command buffer 6 = Trace TCBs and IOBs/twinaxial command buffer based on LSA
4	0 = Do not trace communication and special entries 1 = Trace communication sent to and received from the AS/400 system, and special entries 2 = Trace communication sent to AS/400 system, and special entries 3 = Trace communication received from the AS/400 system, and special entries 4 = Trace frame relay core services (FRCS) 5 = Trace FRCS plus communication sent to and received from the AS/400 system, and special entries 6 = Trace FRCS plus communication sent to the AS/400 system, and special entries 7 = Trace FRCS plus communication received from the AS/400 system, and special entries
5	1 = Enable breakpoint on data match
6	Trace Wrap Switch 0 = Wrap trace data when area full 1 = Do not wrap trace data
7	Trace entry type for breakpoint 0 = TCB trace entry 1 = special conditions trace entry 2 = transmit communication trace entry 3 = receive communication trace entry 4 = twinaxial control block transmit trace entry 5 = twinaxial control block receive trace entry 6 = twinaxial control block trace entry containing a keyboard scan code G = FRCS trace entry (type 80) H = TOK5494 trace entry (type 81) I = SRB/Bridge Manager trace entry (type 82)
8-11	Breakpoint data offset within entry
12	Breakpoint data length (0-5)
13-22	Breakpoint data string (hexadecimal, left-justified)
23-34	Each set of 2 digits from positions 23-24 to 33-34 allows a trace ID from the following list (01-1E): 01 = Trace SDLCID/COMM802ID 10 = Trace CNOSID 02 = Trace SNAID 11 = Trace LU62ID 03 = Trace DSMID 12 = Trace CPPCID 04 = Trace WSMID 13 = Trace ENPID 05 = Trace WSMTID 14 = Trace TDLCID 06 = Trace TAXID 15 = Trace NWMGID 07 = Trace AUTOID 16 = Trace GATEWAYID 08 = Trace X25ID 17 = Trace LOCALTPID 09 = Trace DISKID 18 = Trace LOCALCNOSID 0A = Trace LINKWID 19 = Trace NVRAMID 0B = Trace COPYID 1A = Trace OPRQID 0C = Trace ECLDID 1B = Trace OPPNLID 0D = Trace LCOPID 1C = Trace 5494ITSKID 0E = Trace DISCID 1D = Trace CSUID 0F = Trace ENTPID 1E = Trace RASLID 1F = Trace BRGID Note: Default TCB tracing traces the TCBs from a specific task. IOBs are always included, if requested. The x before a specific trace ID modifies the tracing as follows: Blank Default tracing * Do not trace the IOB for this trace ID > Trace all TCBs sent to this task
35-36	LSA
37-38	Twinaxial control block trace 00 = Do not trace twinaxial 10 = Trace twinaxial port 0 11 = Trace twinaxial port 1 12 = Trace twinaxial port 2 13 = Trace twinaxial port 3 14 = Trace twinaxial port 4 15 = Trace twinaxial port 5 16 = Trace twinaxial port 6 17 = Trace twinaxial port 7 20 = Trace all ports 30 = Trace LSA
39	FR-TR Bridge Traces 1 = trace TOK5494 2 = trace SRB/Bridge Manager 3 = trace TOK5494 and SRB/Bridge Manager

Note: If the TCB trace switch, the communication/special trace switch, and the twinaxial trace switch or the FR-TR bridge trace switch (field 1 positions 3, 4, 37-38, or 39 on row 24) are all zero when Enter is pressed, the master switch (field 1) is also set to zero and no tracing is activated. Also, if the TCB trace switch (field position 3 on row 24) is a number other than zero and no TCB trace IDs are selected in positions 23-24, no TCB trace is done.

7.7 C5 Screen

The C5 screen displays the following data for every workstation address on a selected twinaxial port:

- Current operating status
- Vital Product Data (VPD)
- Translate table information.

If the power at a workstation is turned **OFF**, or if a communication failure prevents a workstation from responding to commands from the 5494 while the C5 test is running, only the port address and the translate table data for that unit appear on the screen. The C5 screen is shown in [Figure 22](#).

The screenshot shows the C5 screen with the following data:

AAA BB CC DD (communication-mode-dependent fields)
NN PP U VVVVV QQQQQQQQ.QQQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSSS.SSSSSSSS TTTTTTTT
F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999

B

	00	1000 0000	0000 0000	AAAA BBB KKKK KKKK	CC
	01	DD EE FF	0000 0000	GGGGGG HH	IIII JJJJ
	02				CC
	03				IIII JJJJ
	04	1000 0000	0000 0000	AAAA BBB KKKK KKKK	CC
	05	DD EE FF	0000 0000	GGGGGG HH	IIII JJJJ
	06	1000 0000	0000 0000	AAAA BBB KKKK KKKK	CC
		DD EE FF	0000 0000	GGGGGG HH	IIII JJJJ

C

D

A

C5 0

Figure 22. C5 Screen

A

Port Select Field

This field permits you to select a particular twinaxial port for display on screen. Valid entries for this field are 0-7. Each time you change this value and press Enter, the 5494 revises the screen to show the configuration of the selected port.

B

Address Field

The first two columns of the C5 screen show each possible address for a selected port. The first digit of this address contains the port number contained in field A, and the second digit is the workstation address. The screen presents a separate entry for each workstation address from 0 to 6, whether or not any device is actually present.

Translate Table Data

Fields on the right-hand side of the screen contain a keyboard code (CC), translate table offset (III), and translate table segment (JJJJ) for each port address. These codes are initially set to default values corresponding to U.S. and Canadian standard keyboards. As a result, this default translate table is used for all attached workstations unless specifically changed during the CSU procedure. The current values for these three fields appear on screen for each possible port address without regard to the status of attached workstations.

Note: The host can also change the translate table by downloading a keyboard translation table (KTT) to the device. If this happens, address III and JJJJ change, for this device, when communication to the AS/400 system starts.

Device Identification Data

When a workstation is turned on and responding to polls, fields in the center of the screen present device identification data. There are either four or five distinct fields, depending on release level:

Field Identification Data

C

Consists of a 1 followed by 15 zeros (1000 0000 0000 0000). This field indicates that a workstation is present and currently responding to POLLs.

AAAA

Contains the type code for the device at the indicated port address (for example, 3477).

BBB

Contains the model code for the device at the indicated port address.

KKKK KKKK

Defines the characteristics of newer workstations. The following table provides specific definitions for each bit in this field.

Positions	Function
1	1 = Color
2	1 = Wide screen
3	1 = Separate error line
4	1 = Text symbols
5	1 = Shadow cursor
6	1 = Large scroll buffer
7	1 = Extended character buffer
8	1 = Double-byte characters

Field D (DD EE FF 0000 0000 GGGGGG HH) contains VPD for that device. [Table 56](#) provides specific definitions for each code contained in this field.

Table 56. Vital Product Data	
Positions	Function
1-2	Device ID (DD)
3-4	Keyboard ID (EE)
5-6	Extend Keyboard ID (FF)
7	1 = Device is a PWS
8	1 = Supports pass-thru data stream

9	Reserved
10	1 = Device has MSR feature
11	1 = Device has SLP feature
12-13	Reserved
14	Device Type 0 = Workstation 1 = Printer
15-21	Serial Number (GGGGGGG)
23-24	Manufacturing ID (HH)

7.8 C6 Screen

The C6 screen shown in [Figure 23](#) is a display of the 5494 error log. When the C6 screen is first selected, the newest entry in the 5494 error log is displayed at the top of the page.

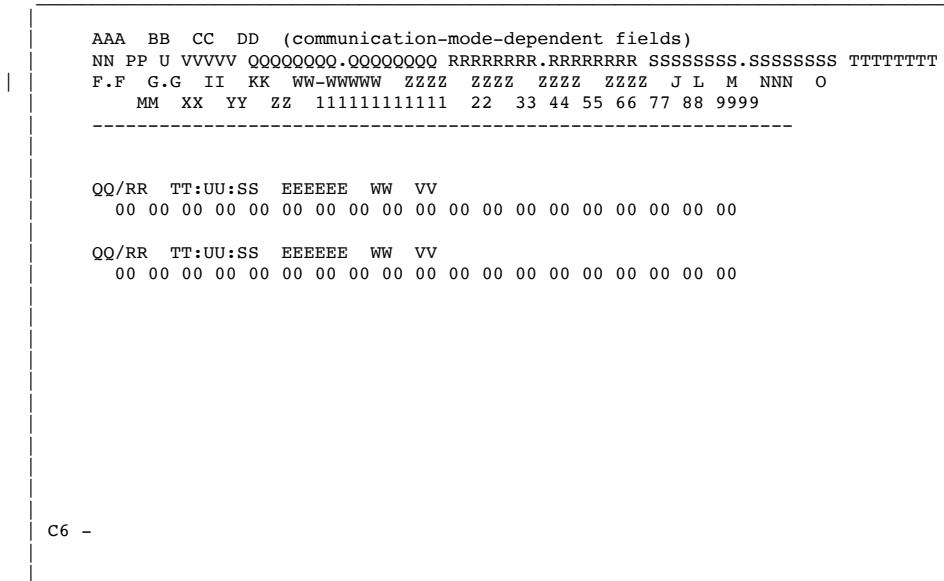


Figure 23. C6 Screen

The contents of each field are defined as follows:

Field Definition

qq

The month the error was logged.

RR

The day the error was logged.

TT

The hour the error was logged.

UU

The minute the error was logged.

SS

The second the error was logged.

EEEEEE

The SRC.

WW

Reserved.

VV

The number of consecutive times that this error has occurred.

00

The optional sense data, or are blank.

Notes:

1. For device errors, the first byte of sense data contains the LSID.

2. For code errors (SRCs beginning with FF) the second 6 digits of the SRC are displayed as sense data.

3. For SRCs 42xxxx, 43xxxx, and 44xxxx, the low six bits of the first byte of sense data represents the LSID and the high two bits designate the AS/400 system experiencing the error:

- 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

4. To scroll through the next or previous pages in the error log, place the cursor on the - field next to **C6** and press the Up Arrow key or the Down Arrow key.

5. To display the first page of the error log, press and hold the **Alt** key and press the Up Arrow key, or press the **Cmd** key followed by the Up Arrow key.

6. To display the last page of the error log, press and hold the **Alt** key and press the Down Arrow key, or press the **Cmd** key followed by the Down Arrow key.

7.9 C7 Screen

The C7 screen permits you to examine the code corrections contained in the 5494 RAM. These corrections are written into RAM from the system diskette during the power-on sequence or from the AS/400 system during session establishment. In general, each system update or revision includes changes to more than one portion of the code. As a result, corrections from a single update are grouped into a section and stored with common header data. When you use screen C7 to examine this data, the 5494 automatically displays the first correction in the first section as shown in [Figure 24](#).

AAA BB CC DD (communication-mode-dependent fields)	NN PP U VVVVV QQQQQQQQ.QQQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSSS.SSSSSSSS TTTTTTTT
--	--

Figure 24. C7 Screen

To facilitate identifying the information on the screen, the first two columns in each row of the data field contain the row number.

Row 07

This row contains header data for the entire file of code corrections:

- Field **A** contains the release level of the code loaded into RAM (0300 = Release 3.0).
 - Field **B** indicates the correction data level in RAM.
 - Field **C** contains a hexadecimal count of the total number of bytes in the correction file.
 - Field **D** contains a hexadecimal count of the sections in the correction file.
 - Field **E** contains the date of the last entry in the correction file.

Row 09

This row presents header data for a single section:

- Field **F** contains the number assigned to this section.
 - Field **G** contains a hexadecimal count of the total number of bytes in this section.
 - Field **H** contains a hexadecimal count of the individual code corrections in this section.

Row 11

This row presents header data for an individual correction:

- Field **I** contains the number assigned to this correction.
- Field **J** contains a 2-byte binary control word for this correction whose bits are defined as shown in the following table:

Bit	Definition
0	1 = Verify data first
1	1 = Do not remove
2	1 = Do not apply
3	1 = Do not apply to an active system
4	1 = Perform an OR operation
5	1 = Perform an AND operation
6	1 = No verify data present
7	Reserved
8	1 = Correction applied successfully
9	1 = Verify failed
10	1 = Another verify in section failed
11-15	Reserved

- Field **K** contains the date that this correction was added to the correction file.

Row 13

This row contains the starting address for the code that this correction replaces:

- Field **L** contains the hexadecimal value for the virtual group.
- Field **M** contains the address segment.
- Field **N** contains the address offset.

Row 14

This row contains the total number of bytes included in this correction.

Rows 16-22

When bit 0 of the control word is 1, rows 16 through 18 contain the verify data for the correction. A maximum of 114 bytes can be displayed in these lines. If the correction includes more than 114 bytes of verify data, the first 113 bytes are displayed, and two dots at the end of row 18 indicate that the data is truncated.

When verify data is present, display of replacement data begins on line 20. As before, the maximum display field is 114 bytes. If the correction includes more than 114 bytes of replacement data, the first 113 bytes are displayed, and two dots at the end of row 22 indicate that the data is truncated.

However, if the correction currently being displayed does not include verify data, display of replacement data begins on line 16. In such cases, screen C7 can accommodate up to 266 bytes of replacement data. If the correction data field exceeds this limit, the display is truncated to the first 265 bytes, and that truncation is indicated by two dots at the end of line 22.

Field S

When the correction file includes more than one section, move the cursor to this field and use the Up Arrow and Down Arrow keys to scroll through the file. Do the following depending on the keyboard you are using:

- To display the first entry, either press and hold the **Alt** key and press the **Up Arrow** key, or press the **Cmd** key followed by the **Up Arrow** key.
- To display the last entry, either press and hold the **Alt** key and press the **Down Arrow** key, or press the **Cmd** key followed by the **Down Arrow** key.

Field P

When a section includes more than one correction, move the cursor to this field and use the Up Arrow and Down Arrow keys to scroll through the file. Do the following depending on the keyboard you are using:

- To display the first entry, either press and hold the **Alt** key and press the **Up Arrow** key, or press the **Cmd** key followed by the **Up Arrow** key.
- To display the last entry, either press and hold the **Alt** key and press the **Down Arrow** key, or press the **Cmd** key followed by the **Down Arrow** key.

7.10 C8 Screen

The C8 screen displays the status of the LAN Gateway. [Figure 25](#) is the C8 screen for Token-Ring Gateway; [Figure 26](#) is the C8 screen for Ethernet Gateway.

Note: If the 5494 is configured for LAN AS/400 attachment, this screen is blank. AS/400 attachment status is displayed on the C2 screen.

```
AAA BB CC DD (communication-mode-dependent fields)
NN PP U VVVVV QQQQQQQQ.00000000 RRRRRRRR.RRRRRRRR SSSSSSSS.SSSSSSSS TTTTTTTT
F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999
```

```
A FFFFFFFF QQ GGGGGGGG QQ HHHHHHHH QQ IIIIIIII QQ JJJJJJJJ QQ
B KKKKKKKK QQ MMMMMMMM QQ NNNNNNNN QQ OOOOOOOO QQ PPPPPPPP QQ
```

```
C XXXX XXST      RRRR
```



Figure 25. C8 Screen for Token-Ring Gateway

A

This row contains the following values:

Field Definition

FFFFFFF

The number of line errors that have occurred.

QQ

Contains the overflow for a particular count that has exceeded the allotted space.

GGGGGGGG

The number of burst errors that have occurred.

HHHHHHHH

The number of abort delimiters.

IIIIIII

The number of receive congestion errors that have occurred.

JJJJJJJJ

The number of frequency errors that have occurred.

B

This row contains the following values:

Field Definition

KKKKKKKK

The number of internal errors that have occurred.

MMMMMMMM

The number of access control errors that have occurred.

NNNNNNNN

The number of frames that have been lost.

OOOOOOOO

The number of frame copy errors that have occurred.

PPPPPPPP

The number of token errors that have occurred.

C

This row contains the following values:

- Field XXXX is reserved.

- Field XXST is:

- XX is reserved.
- S is either of the following:

0 = Token-Ring adapter closed
 1 = Token-Ring adapter open

- T is either of the following:

0 = 4 Mbps Token-Ring speed
 1 = 16 Mbps Token-Ring speed

- Field RRRR is the number of active Token-Ring links in hexadecimal.

```

AAA BB CC DD (communication-mode-dependent fields)
NN PP U VVVVV QQQQQQQQ.QQQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSSS.SSSSSSSS TTTTTTTT
F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999
-----
```

A FFFFFFFF QQ GGGGGGGG QQ

B XXXX XXST RRRR

C8

Figure 26. C8 Screen for Ethernet Gateway

A - Ethernet Gateway Error Counters

This row contains the following values:

Field Definition

FFFFFFF

The number of transmit errors.

QQ

Contains the overflow for a particular count that has exceeded the allotted space.

GGGGGGGG

The number of receive congestion errors.

B - Ethernet State Byte

This row contains the following values:

Table 57. Ethernet State Byte	
Bit	Function
0-5	Reserved
6	Ethernet status 0 = Closed 1 = Open
7	Reserved

Field RRRR is the number of active Ethernet links in hexadecimal.

7.11 C9 Screen

The C9 screen displays the status of link stations attached to the 5494 when using a LAN or frame relay. Select C9 1, and press Enter to display the link station status for the AS/400 connection. Select C9 2, and press Enter to display the LAN Gateway link station status.

The information on the C9 screen is displayed by link station number starting with link station 1 through link station 80, including only active link stations. You can only select C9 1 if token ring, Ethernet, or frame relay is used to connect to the AS/400 system; you can only select C9 2 if a LAN Gateway is configured.

Information about four link stations is displayed on each screen. You can scroll through the link station entries by moving the cursor to the - field next to **C9 2** and using the up and down arrow keys. If the - field is not present, all active link stations are displayed on the first screen.

[Figure 27](#) represents the fields and values displayed for token-ring or Ethernet link stations.

[Figure 28](#) represents the fields and values displayed for frame-relay link stations.

```
AAA BB CC DD (communication-mode-dependent fields)
NN PP U VVVVVV QQQQQQQQ.QQQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSSS.SSSSSSSS TTTTTTTT
F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999
```

```

-----  

BBBB AA/AA DD/DD     CCCCCCCCCCCC      EE  

11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11  

FFFFFFFFFF KK GGGGGGGG KK HHHHHHHH KK IIIIIIII KK JJJJJJJJ KK  

BBBB AA/AA DD/DD     CCCCCCCCCCCC      EE  

11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11  

FFFFFFFFFF KK GGGGGGGG KK HHHHHHHH KK IIIIIIII KK JJJJJJJJ KK  

BBBB AA/AA DD/DD     CCCCCCCCCCCC      EE  

11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11  

FFFFFFFFFF KK GGGGGGGG KK HHHHHHHH KK IIIIIIII KK JJJJJJJJ KK  

BBBB AA/AA DD/DD     CCCCCCCCCCCC      EE  

11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11  

FFFFFFFFFF KK GGGGGGGG KK HHHHHHHH KK IIIIIIII KK JJJJJJJJ KK

```

C9 2

Figure 27. C9 Screen for Token Ring or Ethernet

The values displayed are:

Field Definition

BBBB

Link station ID

AA/AA

Link state/LLC state

DD/DD

Link primary state/link secondary state

CCCCCCCCCCC

Token-Ring or Ethernet address

EE

T1 timer value

11

Network header

FFFFFFF

Number of I-frames transmitted

KK

Overflow indicator

GGGGGGGG

Number of I-frames received

HHHHHHHH

Number of transmit errors

IIIIIII

Number of receive errors

JJJJJJJJ

Number of times T1 timer expired

```

AAA BB CC DD (communication-mode-dependent fields)
NN PP U VVVVV VVVVVV QQQQQQQQ.QQQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSSS.SSSSSSSS TTTTTTTT
F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999
-----  

BBBB AA/AA          CCCC
FFFFFFFFFF GGGGGGGG HHHHHHHH IIIIIIII JJJJJJJJ
KKKKKKKK LLLLLLLL MMMMMMMM NNNNNNNN OOOOOOOO  

BBBB AA/AA          CCCC
FFFFFFFFFF GGGGGGGG HHHHHHHH IIIIIIII JJJJJJJJ
KKKKKKKK LLLLLLLL MMMMMMMM NNNNNNNN OOOOOOOO  

BBBB AA/AA          CCCC
FFFFFFFFFF GGGGGGGG HHHHHHHH IIIIIIII JJJJJJJJ
KKKKKKKK LLLLLLLL MMMMMMMM NNNNNNNN OOOOOOOO

```

Figure 28. C9 Screen for Frame Relay

The values displayed are:

Field Definition

BBBB Link station ID

AA/AA Link state/LLC state

CCCC DLCI

FFFFFF Total number of bytes transmitted

GGGGGGGG Total number of bytes received

HHHHHHHH Total number of frames transmitted

IIIIII Total number of frames received

JJJJJJJJ Number of frames received in error

KKKKKKKK Number of filtered frames

LLLLLLL Number of frames received with BECN

MMMMMM Number of frames received with FECN

NNNNNNNN Number of frames received with DE

OOOOOOOO Number of times T1 timer expired

| 7.12 CA Screen

| The CA screen displays the default host table and the current host table
| for twinaxially attached displays and printers. This screen is available
| when concurrent host attachment is configured.

| The default host table displays the host that produces the sign-on screen
| when the display is first powered on or the host with which printer
| communicates. Instructions are in the *5494 Remote Control Unit User's
Guide* to change this host.

| The current host table displays the host that is currently active.

| Because it is possible to have a shared-address display attached to the
| 5494, each address has positions for four sessions.

AAA BB CC DD (communication-mode-dependent fields)
NN PP U VVVVV QQQQQQQQ.QQQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSSS.SSSSSSSS
F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O
MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999

P0/ a b c d a b c d a b c d a b c d a b c d a b c d a b c d a b c d
P1/ a b c d a b c d a b c d a b c d a b c d a b c d a b c d a b c d
P2/ a b c d a b c d a b c d a b c d a b c d a b c d a b c d a b c d
P3/ a b c d a b c d a b c d a b c d a b c d a b c d a b c d a b c d
P4/ a b c d a b c d a b c d a b c d a b c d a b c d a b c d a b c d
P5/ a b c d a b c d a b c d a b c d a b c d a b c d a b c d a b c d
P6/ a b c d a b c d a b c d a b c d a b c d a b c d a b c d a b c d
P7/ a b c d a b c d a b c d a b c d a b c d a b c d a b c d a b c d

P0/ A B C D A B C D A B C D A B C D A B C D A B C D A B C D A B C D
P1/ A B C D A B C D A B C D A B C D A B C D A B C D A B C D A B C D
P2/ A B C D A B C D A B C D A B C D A B C D A B C D A B C D A B C D
P3/ A B C D A B C D A B C D A B C D A B C D A B C D A B C D A B C D
P4/ A B C D A B C D A B C D A B C D A B C D A B C D A B C D A B C D
P5/ A B C D A B C D A B C D A B C D A B C D A B C D A B C D A B C D
P6/ A B C D A B C D A B C D A B C D A B C D A B C D A B C D A B C D
P7/ A B C D A B C D A B C D A B C D A B C D A B C D A B C D A B C D
CA

| Figure 29. CA Screen

| The default host table for ports 0-7 are shown at the top of the screen
| area. The current host table is shown at the bottom. The groups of four
| (a b c d or A B C D) represent one station address. Station addresses are
| 0-6.

| Sessions "a" and "A" are for the base session of a shared-address display
| or for the only session of a single address display. Sessions "b-d" and
| "B-D" are for the additional shared sessions.

| The default host table has an entry for every possible session even though
| there may be a printer or a single-session display attached at that
| address.

| The current host table displays a 0 for any inactive session.

| Hosts 1-4 are the same hosts configured as H1-H4.

| **Notes:**

| 1. The default host table displays "1 2 3 4" for printers that are
| configured for printer sharing.

| 2. The current host table shows you the host number even if the host is
| not active and an error code is currently displayed on the user'
| screen.

| 7.13 CB Screen

| The CB screen displays the frame relay token-ring bridge configuration
| information, status, and counters. It is available when FR-TR Bridge is
| configured.

| **Note:** There is no attempt to display the bridge filter file in concurrent
| mode. To view the filter file, use any ASCII editor to view the file,
| 15494FILT.DAT.

| You can use the CB screen to start and stop frame forwarding or to reset
| the counters to zero. The screen includes the date and time when the
| counters were last updated.

| To reset the counters, stop or start bridge forwarding, or refresh the
| counters, set the switches on line 24 as desired and press **Enter**.

AAA BB CC DD (communication-mode-dependent fields)	
NN PP U VVVVVV QQQQQQQQ.QQQQQQQQ RRRRRRRR.RRRRRRRR SSSSSSSS.SSSSSSSS	
F.F G.G II KK WW-WWWWW ZZZZ ZZZZ ZZZZ ZZZZ J L M NNN O	
MM XX YY ZZ 111111111111 22 33 44 55 66 77 88 9999	
B: --b-- n pppp aa tt s	P1: --p-- nnn ssssss h f
	P2: --p-- nnn ssssss h f AAA BBB aaaaaaaaaaaa CCC DDD
1:1a1a1a1a 1b1b1b1b 1c1c1c1c	1:1a1a1a1a 1b1b1b1b 1c1c1c1c
2:2a2a2a2a 2b2b2b2b 2c2c2c2c	2:2a2a2a2a 2b2b2b2b 2c2c2c2c
3:3a3a3a3a 3b3b3b3b 3c3c3c3c	3:3a3a3a3a 3b3b3b3b 3c3c3c3c
4:4a4a4a4a 4b4b4b4b 4c4c4c4c	4:4a4a4a4a 4b4b4b4b 4c4c4c4c
5:5a5a5a5a	5:5a5a5a5a
6:6a6a6a6a 6b6b6b6b 6c6c6c6c 6d6d6d6d 6e6e6e6e	6:6a6a6a6a 6b6b6b6b 6c6c6c6c 6d6d6d6d 6e6e6e6e
7:7a7a7a7a 7b7b7b7b 7c7c7c7c	7:7a7a7a7a 7b7b7b7b 7c7c7c7c
8:8a8a8a8a 8b8b8b8b	8:8a8a8a8a 8b8b8b8b
9:9a9a9a9a 9b9b9b9b 9c9c9c9c 9d9d9d9d 9e9e9e9e 9f9f9f9f	9:9a9a9a9a 9b9b9b9b 9c9c9c9c 9d9d9d9d 9e9e9e9e 9f9f9f9f
CB W Y Z	yy/mm/dd hh:mm:ss

| **Figure 30. CB Screen**

| The lower portion of the screen is divided in half. Information for the
| token-ring port (port 1) of the bridge is on the left. Information for
| the frame relay port (port 2) of the bridge is on the right.

| Data on the screen is defined as follows:

| **Status**
and Configuration Information:

| **Field Definition**

| B:
Bridge information

| --b--
Bridge Forwarding Status

|
| 0 = Stopped
| 1 = Active

| n
Bridge Number

| pppp
Bridge Priority

| aa
Maximum Age BPDUs in seconds

| tt
Time between BPDUs in seconds

| s
Enable Automatic Spanning Tree Operation

|
| 0 = No
| 1 = Yes

| P1: P2
P1 = Port 1 information for the token-ring port is on
| the left side of the screen

| P2 = Port 2 information for the frame relay port is
| on the right side of the screen

| --p--
Port Status

|
| 0 = Disabled
| 1 = Enabled

| nnn

Port Ring Number

| sssss
Port Speed

| h
Port Hop Count

| f
Forward Spanning Tree Explorer frames on this port

|
0 = No
1 = Yes

| AAA BBB
First two frame relay DLCIs (shown if configured)

| aaaaaaaaaaaa
Frame Relay MAC Address

| CCC DDD
Last two frame relay DLCIs (shown if configured)

| **Counters:**

| Note: If a "+" follows any counter, the counter has overflowed.

| **Field Definition**

|
Outbound Frames Summary

| 1a1a1a1a
-Transmitted

| 1b1b1b1b
-Normal Discards

| 1c1c1c1c
-Error Discards

|
Inbound Frames Summary

| 2a2a2a2a
-Received

| 2b2b2b2b
-Normal Discards

- | 2c2c2c2c
 - Error Discards
- |
 - Outbound Frames Transmitted
- | 3a3a3a3a
 - All Routes Explorer
- | 3b3b3b3b
 - Spanning Tree Explorer
- | 3c3c3c3c
 - Specifically Routed Frames
- |
 - Outbound Bytes Transmitted
- | 4a4a4a4a
 - All Routes Explorer
- | 4b4b4b4b
 - Spanning Tree Explorer
- | 4c4c4c4c
 - Specifically Routed Frames
- |
 - Outbound Frames Normal Discards
- | 5a5a5a5a
 - Filtered
- |
 - Outbound Frames Error Discards
- | 6a6a6a6a
 - Transmit Delay Exceeded
- | 6b6b6b6b
 - Congestion
- | 6c6c6c6c
 - Maximum Frame Size Exceeded
- | 6d6d6d6d
 - Target Segment Inoperative
- | 6e6e6e6e
 - Non-specific
- |
 - Inbound Frames Received
- | 7a7a7a7a
 - All Routes Explorer
- | 7b7b7b7b
 - Spanning Tree Explorer
- | 7c7c7c7c
 - Specifically routed frames
- |
 - Inbound Frames Normal Discards
- | 8a8a8a8a
 - Filtered
- | 8b8b8b8b
 - Hop count exceeded
- |
 - Inbound Frames Error Discards

| 9a9a9a9a
 -Congestion

| 9b9b9b9b
 -Invalid routing information

| 9c9c9c9c
 -SRF Duplicate segment

| 9d9d9d9d
 -STE Duplicate segment

| 9e9e9e9e
 -STE or ARE Segment mismatch

| 9f9f9f9f
 -Non-specific

| **Last**
 Line:

| **Field Definition**

| CB
 Panel identifier

| W
 Enable / Disable Bridge

|
|
|
 0 = Do not change forwarding status
 1 = Start Frame Forwarding
 2 = Stop Frame Forwarding

| Y
 Counter reset for port 1 (token-ring)

|
|
|
 0 = Do not reset
 1 = Reset counters to zero

| Z
 Counter reset for port 2 (frame relay)

|
|
|
 0 = Do not reset
 1 = Reset counters to zero

| **Note:** Switches W, Y, and Z are reset to zero after
| the Enter key is pressed.

| yy/mm/dd
Date in year, month, day format of last screen
| refresh

| hh:mm:ss
Time in hour, minute, second format of last screen
| refresh

8.0 Topic 8. Parts Catalog

Subtopics:

- [8.1 How To Use This Parts Catalog](#)
 - [8.2 Assemblies](#)
 - [8.3 Visual Index I_5494 Remote Control Unit](#)
 - [8.4 Catalog Section](#)
-

8.1 How To Use This Parts Catalog

° SIMILAR ASSEMBLIES: If two assemblies contain a majority of identical parts, they are broken down on the same list. Common parts are shown by one index number. Parts peculiar to one or the other of the assemblies are listed separately and identified by description.

° AR: (As Required) in the Units column indicates that the quantity is not the same for all machines.

° NP: (Non-Procurable) in the Units column indicates that the part is non-procurable and that the individual parts or the next higher assembly should be ordered.

° NR: (Not Recommended) in the Units column indicates that the part is procurable but not recommended for field replacement, and that the next higher assembly should be ordered.

° R: (Restricted) in the Units column indicates the part has a restricted availability.

° INDENTURE: The indenture is marked by a series of dots located before the parts description. The indenture indicates the relationship of a part to the next higher assembly. For example:

Indenture Relationship of Parts

(No dot) MAIN ASSEMBLY

(One dot) ° Detail parts of a main assembly

(One dot) ° Subassembly of the main assembly

(Two dots) ° ° Detail part of a one-dot subassembly

(Two dots) ° ° Subassembly of a one-dot subassembly

(Three dots)° ° ° Detail part of a two-dot
subassembly

Subtopics:

- [8.1.1 Assembly n: Cover Assembly \(Example\)](#)
-

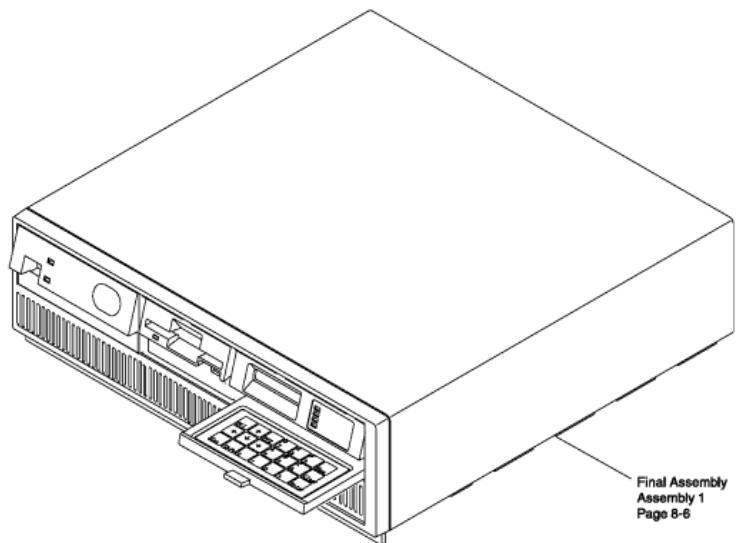
8.1.1 Assembly n: Cover Assembly (Example)

Asm-Index	Part Number	Units	Description
n-	2512667	1	Cover Assembly, Rear, Red
-	2512668	1	Cover Assembly, Rear, Yellow
-	2512669	1	Cover Assembly, Rear, Blue
-	2512670	1	Cover Assembly, Rear, Gray
-	2513714	1	Cover Assembly, Rear, White For Next Higher Assembly, See Assembly 1-2
-1	5373637	1	◦ Seal, Top
-2	5356429	2	◦ Clip, Retaining
-3	2513013	3	◦ Liner, Cover
-4	5373727	1	◦ Seal, Left Side
-5	5356429	3	◦ Clip, Retaining
-6	513668	2	◦ Catch, Cover
-7	81693	4	◦ Screw, Mach, Bind Hd 6-32, 0.375 Long
-8	1847630	R	◦ Finger Stock Assembly
-9	1847602	NR	◦ ◦ Channel, Finger Stock
-10	1847604	NR	◦ ◦ Finger Stock, 2.00 Long
-11	5373639	AR	◦ Seal, Bottom
-12	5356429	2	◦ Clip, Retaining
-13		NP	◦ Cover, Rear, Without Paint

8.2 Assemblies

Final Assembly 8.4.1
Power Cords, Cable Assemblies 8.4.2

8.3 Visual Index I. 5494 Remote Control Unit



Final Assembly
Assembly 1
Page 8-6

Power Cords
Assembly
Page 8-12

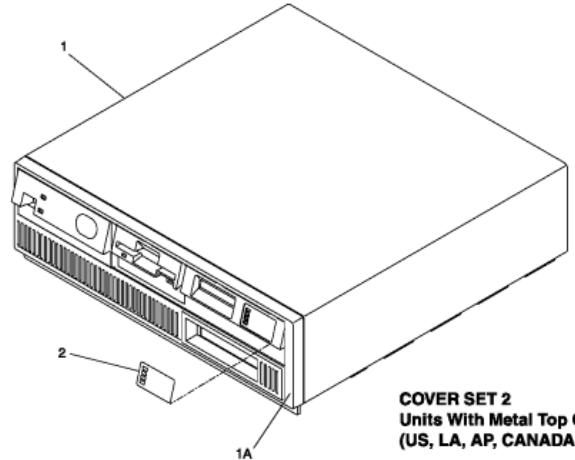
EACSP001

8.4 Catalog Section

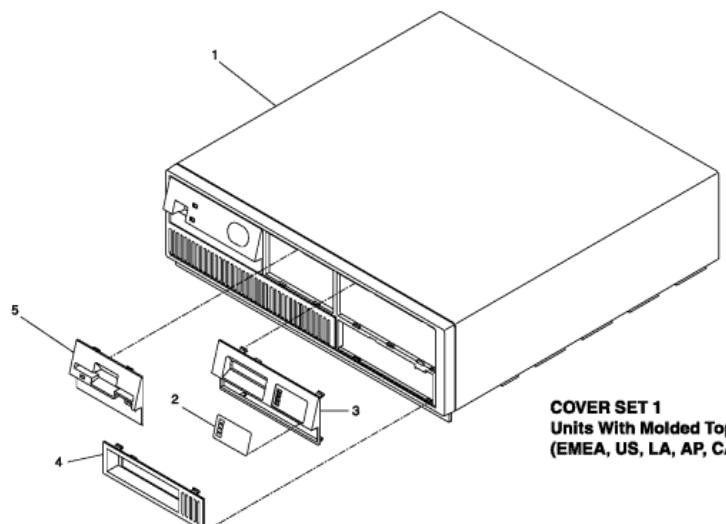
Subtopics:

- [8.4.1 Assembly 1: Final Assembly](#)
 - [8.4.2 Assembly 2: Power Cords, Cable Assemblies](#)
-

8.4.1 Assembly 1: Final Assembly



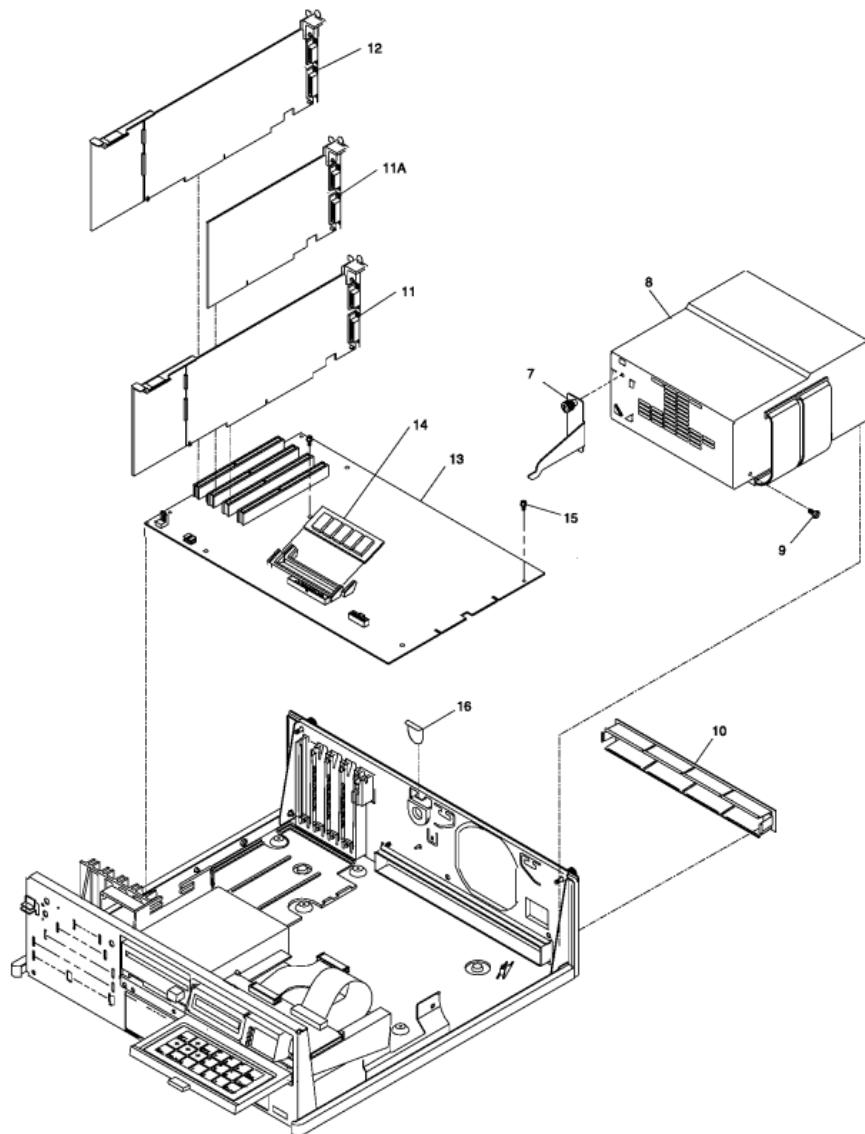
COVER SET 2
Units With Metal Top Cover
(US, LA, AP, CANADA)



COVER SET 1
Units With Molded Top Cover
(EMEA, US, LA, AP, CANADA)

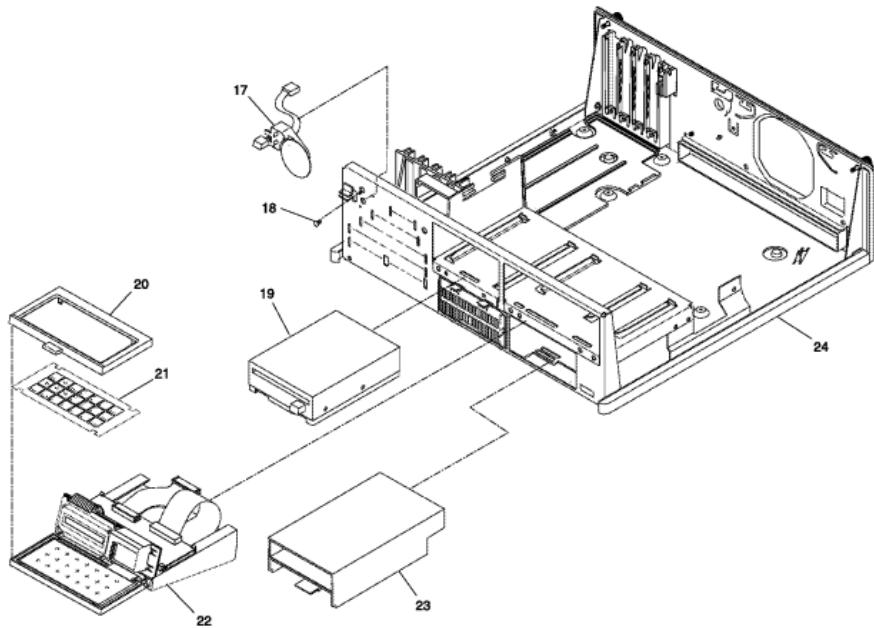
EANCP002

Asm-Index	Part Number	Units	Description
1-			Final Assembly
-1		NP	◦ Cover,Top,Metal (Cover Set 2)
-1		NP	◦ Cover,Top,Molded (Cover Set 1)
-1A		NP	◦ Cover,Front
-2	02F9612	1	◦ Overlay,LED-English
-2	02F9471	1	◦ Overlay,LED-Japanese
-2	02F9993	1	◦ Overlay,LED-French
-2	02F9995	1	◦ Overlay,LED-German
-2	02F9997	1	◦ Overlay,LED-Italian
-2	02F9999	1	◦ Overlay,LED-Spanish
-2	02F9488	1	◦ Overlay,LED-Korean
-3		NP	◦ Bezel,Operator Panel
-4	02F9537	1	◦ Bezel,Pocket
-5	15F7421	1	◦ Drive Bezel/Lens Asm
-6		NP	◦ Not illustrated or listed



EAKSP008

Asm-Index	Part Number	Units	Description
1-7		NP	◦ Bracket,Support
-8	03F0510	1	◦ Power Supply,Universal
-9	64F3212	3	◦ Screw
-10		NP	◦ Bezel,Back Panel (Cover Set 1)
-11	10H4633	1	◦ Card,Ethernet
-11A	93F2954	1	◦ Card,Token-Ring
-12	02F9492	1	◦ Card,Host-Twinaxial
-13	02F9491	1	◦ Card,Planar
-14	53FT913	1	◦ Single In-Line Memory Module
-15	64F3212	6	◦ Screw
-16		NP	◦ Cover (Cover Set 1)



EAK2P004

Asm-Index	Part Number	Units	Description
1-17	92F2203	1	◦ Speaker/Switch Asm
-18	64F3414	1	◦ Screw
-19	02F9473	1	◦ Disk Drive Asm
-20	02F9549	1	◦ Bezel,Keyboard
-21	02F9555	1	◦ Overlay,Keyboard-English
-21	02F9470	1	◦ Overlay,Keyboard-Japanese
-21	02F9992	1	◦ Overlay,Keyboard-French
-21	02F9994	1	◦ Overlay,Keyboard-German
-21	02F9996	1	◦ Overlay,Keyboard-Italian
-21	02F9998	1	◦ Overlay,Keyboard-Spanish
-21	02F9487	1	◦ Overlay,Keyboard-Korean
-22	02F9472	1	◦ Keyboard Asm
-23		NP	◦ Pocket (Cover Set 1)
-24		NP	◦ Frame Asm

8.4.2 Assembly 2: Power Cords, Cable Assemblies

Asm-Index	Part Number	Units	Description
			Line Cords

2-1	13F9941	AR	Line Cord, 250V,AFE
-2	13F9980	AR	Line Cord, 250V,EMEA & AFE
-3	13F9998	AR	Line Cord, 250V,EMEA
-4	14F0016	AR	Line Cord, 250V,EMEA & AFE
-5	14F0034	AR	Line Cord, 250V,EMEA & AFE
-6	14F0052	AR	Line Cord, 250V,EMEA
-7	14F0070	AR	Line Cord, 250V,EMEA & AFE
-8	14F0088	AR	Line Cord, 250V,EMEA
-9	1838573	AR	Line Cord, 10 AMP/250 Vac unshld EMEA & AFE
-10	1838584	AR	Line Cord, 125V,USA/Canada Hospital Service
-11	1838587	AR	Line Cord, 125V, 6FT,USA/Canada Hospital Service
-12	6952299	AR	Line Cord, 125V,EMEA & AFE,USA/Canada
-13	6952301	AR	Line Cord, 125V, 6FT,Chicago,USA/Canada
-14	6952337	AR	Line Cord, 125V,AFE,Twist Lock,Japan
-15	7842124	AR	Line Cord, 250V,AFE,Twist Lock
-16	7842140	AR	Line Cord, 125V, 6FT,Twist Lock, Chicago,USA/Canada
-17	7842142	AR	Line Cord, 125V,AFE,Twist Lock, Nicaragua,USA/Canada
Cable Assemblies			
-18	02F9660	AR	Cable Asm,EIA
-19	02F9661	AR	Cable Asm,EIA,Japan & Korea
-20	02F9662	AR	Cable Asm,EIA,Germany
-21	02F9670	AR	Cable Asm,X.21
-22	02F9676	AR	Cable Asm,V.35,all except France
-23	02F9677	AR	Cable Asm,V.35,France
-24	6339098	AR	Cable Asm,Token Ring
-25	72X5645	AR	Cable Asm,Twinaxial Workstation Adapter (Ports 0-3)
-26	03F0386	AR	Cable Asm,Twinaxial Workstation Adapter (Ports 4-7)

9.0 Topic 9. Part Number Index

Part Number	Asm-Index	Topic
02F9470	1-21	8.4.1
02F9471	1-2	8.4.1
02F9472	1-22	8.4.1
02F9473	1-19	8.4.1
02F9487	1-21	8.4.1
02F9488	1-2	8.4.1
02F9491	1-13	8.4.1
02F9492	1-12	8.4.1
02F9537	1-4	8.4.1
02F9549	1-20	8.4.1
02F9555	1-21	8.4.1
02F9612	1-2	8.4.1
02F9660	2-18	8.4.2
02F9661	2-19	8.4.2
02F9662	2-20	8.4.2
02F9670	2-21	8.4.2
02F9676	2-22	8.4.2
02F9677	2-23	8.4.2
02F9992	1-21	8.4.1
02F9993	1-2	8.4.1
02F9994	1-21	8.4.1
02F9995	1-2	8.4.1
02F9996	1-21	8.4.1
02F9997	1-2	8.4.1
02F9998	1-21	8.4.1
02F9999	1-2	8.4.1
03F0386	2-26	8.4.2
03F0510	1-8	8.4.1
10H4633	1-11	8.4.1
13F9941	2-1	8.4.2
13F9980	2-2	8.4.2
13F9998	2-3	8.4.2
14F0016	2-4	8.4.2
14F0034	2-5	8.4.2
14F0052	2-6	8.4.2
14F0070	2-7	8.4.2
14F0088	2-8	8.4.2
15F7421	1-5	8.4.1
1838573	2-9	8.4.2

1838584	2-10	8.4.2
1838587	2-11	8.4.2
53F7913	1-14	8.4.1
6339098	2-24	8.4.2
64F3212	1-9	8.4.1
	1-15	8.4.1
64F3414	1-18	8.4.1
6952299	2-12	8.4.2
6952301	2-13	8.4.2
6952337	2-14	8.4.2
72X5645	2-25	8.4.2
7842124	2-15	8.4.2
7842140	2-16	8.4.2
7842142	2-17	8.4.2
92F2203	1-17	8.4.1
93F2954	1-11A	8.4.1

A.0 Appendix A. Safety Notices

This appendix lists all of the safety notices used in this book. It includes both danger and caution notices.

Subtopics:

- [A.1 Danger Notices](#)
 - [A.2 Caution Notices](#)
-

A.1 Danger Notices

Subtopics:

- [A.1.1 U.S. English](#)
- [A.1.2 Brazilian Portuguese](#)
- [A.1.3 Canadian French](#)
- [A.1.4 Chinese](#)
- [A.1.5 Croatian](#)
- [A.1.6 Danish](#)
- [A.1.7 Dutch](#)
- [A.1.8 Finnish](#)
- [A.1.9 French](#)
- [A.1.10 German](#)
- [A.1.11 Italian](#)
- [A.1.12 Japanese](#)
- [A.1.13 Korean](#)
- [A.1.14 Norwegian](#)
- [A.1.15 Polish](#)
- [A.1.16 Portuguese](#)
- [A.1.17 Russian](#)
- [A.1.18 Spanish](#)
- [A.1.19 Swedish](#)
- [A.1.20 U.S. English](#)
- [A.1.21 Brazilian Portuguese](#)
- [A.1.22 Canadian French](#)
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- [A.1.34 Polish](#)
- [A.1.35 Portuguese](#)

- [A.1.36 Russian](#)
 - [A.1.37 Spanish](#)
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 - [A.1.74 Russian](#)
 - [A.1.75 Spanish](#)
 - [A.1.76 Swedish](#)
-

A.1.1 U.S. English

DANGER

Never work on equipment, or connect or disconnect signal cables during periods of lightning activity.

A.1.2 Brazilian Portuguese

PERIGO

Nunca trabalhe em equipamento, ou conecte ou desconecte cabos de sinal durante relâmpagos e trovoadas.

A.1.3 Canadian French

Danger

Ne travaillez jamais sur une machine, ni ne connectez ou déconnectez de câbles de transmission pendant un orage.

A.1.4 Chinese

危險！

閃電時，請不要使用設備，連接或切斷信號線。

A.1.5 Croatian

OPASNOST

Nikad nemoj raditi na opremi, spajati ili odspajati signalne kabele dok sijeva.

A.1.6 Danish

Pas på!

Man må hverken arbejde med udstyret eller tilslutte eller afbryde signal-kabler i tordenvejr.

A.1.7 Dutch

Gevaarlijk

Werk nooit aan een machine en koppel nooit signaalkabels los of vast tijdens een onweer.

A.1.8 Finnish

VAARA

Älä työskentele ohjaimella, irrota tai kytke liitintäkaapeleita salamoinnin aikana.

A.1.9 French

Danger

N'effectuez aucune manipulation sur le 5494 et ne connectez ou ne déconnectez aucun câble d'interface pendant un orage.

A.1.10 German

VORSICHT

Bei Gewitter dürfen keine Arbeiten am Gerät vorgenommen und keine Kabel angeschlossen oder gelöst werden.

A.1.11 Italian

Pericolo

Durante un temporale, non operare mai sulle apparecchiature o collegare o scollegare i cavi segnali.

A.1.12 Japanese

危険

雷が発生している間は、けっして機器を操作したり、あるいは信号ケーブルの接続、切り離しはしないでください。

A.1.13 Korean

위험

번개는 동안 신호 케이블을 연결 또는 단절시키지 마시오.
또한 장비도 사용하지 마시오.

A.1.14 Norwegian

FARE!

Arbeid aldri med utstyr når det er fare for lynnedslag. I slike tilfeller må du hverken trekke ut signalkabler eller kople noen til.

A.1.15 Polish

UWAGA!

Nie serwisować urządzenia, oraz nie włączać ani wyłączać kabli sygnalowych podczas świecenia się lampek kontrolnych.

A.1.16 Portuguese

PERIGO

Não trabalhe nunca em equipamento, nem ligue ou desligue cabos de sinal, durante períodos de trovoadas.

A.1.17 Russian

ОСТОРОЖНО

Запрещается работать с оборудованием, присоединять или отсоединять сигнальные кабели во время грозы.

A.1.18 Spanish

PELIGRO

Nunca trabaje con el equipo, ni conecte o desconecte cables de señal durante períodos en los que existe actividad meteorológica de rayos.

A.1.19 Swedish

Varng

Arbata aldrig med utrustning eller signalkablar vid åskväder.

A.1.20 U.S. English

DANGER

||| Do not connect ac voltage to the power supply when it is removed from || the control unit. Severe electrical shock could result. Safe || grounding of the power supply is ensured only when the power supply is || securely fastened in the control unit. ||

A.1.21 Brazilian Portuguese

PERIGO

Não conecte a voltagem ac à fonte de alimentação quando ela estiver retirada da unidade de controle. Choques elétricos graves podem ocorrer. O aterrramento da fonte de alimentação só está assegurado quando a mesma está alojada adequadamente na unidade de controle.

A.1.22 Canadian French

Danger

Ne branchez pas de courant secteur au bloc d'alimentation lors du retrait de celui-ci du contrôleur. Vous vous exposeriez à un sérieux choc électrique. La mise à la terre du bloc d'alimentation n'est sûre qu'une fois le bloc d'alimentation solidement fixé dans le contrôleur.

A.1.23 Chinese

危險！

將電源供應器由控制單元除去時，請切斷其與 AC 電源的連接，否則恐有嚴重電擊之虞。唯有將電源供應器確實地固定於控制單元時，才能確保其安全的接地。

A.1.24 Croatian

OPASNOST

Ne spajaj jedinicu za napajanje na izmjenični napon dok je izvadenica iz kontrolne jedinice.
Moglo bi doći do ozbiljnog električnog udara.
Jedinica za napajanje je sigurno uzemljena samo kada je sigurno učvršćena u kontrolnoj jedinici.

A.1.25 Danish

Pas på!

Tænd ikke for strømforsyningensenheden, når den er afmonteret kontrolenheden, da dette kan medføre alvorlige stød. En korrekt jordforbindelse til strømforsyningensenheden kan kun opnås, hvis strømforsyningensenheden sidder ordentligt fast i kontrolenheden.

A.1.26 Dutch

Gevaarlijk

Zet de voeding niet onder netstroom wanneer deze uit de controller verwijderd is. U loopt anders het risico op een ernstige elektrische schok. De voeding is slechts veilig geaard wanneer ze stevig vastzit in de controller.

A.1.27 Finnish

VAARA

Älä kytke virtalähteeseen virtaa, kun virtalähde on irrotettu ohjausyksiköstä. Muutoin voit saada vaarallisen sähköiskun. Virtalähde on maadoitettu turvallisesti vain silloin, kun se on kiinnitetty tukeasti ohjausyksikköön.

A.1.28 French

Danger

Ne branchez pas l'unité d'alimentation sur le secteur lorsqu'elle est démontée du contrôleur. Des chocs électriques graves pourraient survenir.

La mise à la terre de l'unité d'alimentation n'est assurée que lorsqu'elle est fixée dans le contrôleur.

A.1.29 German

VORSICHT

Keine Netzspannung am Netzgerät anschließen, solange es nicht in der Steuereinheit montiert ist. Dies könnte die Ursache für einen schweren Stromschlag sein. Ordnungsgemäße Erdung ist nur dann gewährleistet, wenn das Netzgerät ordnungsgemäß in der Steuereinheit befestigt ist.

A.1.30 Italian

Pericolo

Non collegare l'alimentatore alla presa di corrente quando l'alimentatore è rimosso dall'unità di controllo. Ciò potrebbe provocare forti scosse elettriche. Un sicuro collegamento a terra dell'alimentatore si ha solo quando esso è fissato all'unità di controllo.

A.1.31 Japanese

危険

パワー・サプライが制御装置から取り外されているときは、それをAC電源に接続しないでください。感電することがあります。
パワー・サプライは制御装置にしっかりと固定されてはじめて、安全に接地されます。

A.1.32 Korea

위험

전원 공급구이 제어장치에서 제거되었을때는 교류전압을 공급하지 마시오. 위험한 급전의 피해를 입을수 있습니다.
전원 공급구이 제어장치에 안전하게 고정되었을 때만 전원 공급구의 안전접지이 보장 됩니다.

A.1.33 Norwegian

FARE!

Du må ikke kople nettspenning til strømforsyningenhet når den er fjernet fra kontrollenheten. Dette kan forårsake alvorlige elektriske støt. Strømforsyningenhet er bare forsvarlig jordet når den er festet på en sikker måte til kontrollenheten.

A.1.34 Polish

UWAGA!

Niebezpieczenstwo przepięcia.
Po wyjęciu zasilacza z panelu, nie podłączać go do sieci. Zasilacz jest prawidłowo uziemiony wyłącznie po prawidłowym zamocowaniu w panelu.

A.1.35 Portuguese

PERIGO

Não ligue a fonte de alimentação à corrente eléctrica CA, quando a fonte estiver retirada da unidade de controlo. Poderá ocasionar um choque eléctrico perigoso. A ligação de terra só está convenientemente assegurada quando a fonte de alimentação está colocada e apertada na unidade de controlo.

A.1.36 Russian

ОСТОРОЖНО

Запрещается подключать источник переменного тока к блоку питания, когда он отсоединен от блока управления. Это может вызвать сильное поражение электрическим током.
Безопасное заземление блока питания обеспечивается, только если блок питания надежно укреплен в блоке управления.

A.1.37 Spanish

PELIGRO

No conecte la tensión de CA a la fuente de alimentación al retirarla de la unidad de control, ya que ello produciría un grave electrochoque. La conexión a tierra de la fuente de alimentación sólo es segura si dicha fuente está correctamente sujetada a la unidad de control.

A.1.38 Swedish

Varning -- livsfara

Anslut inte växelpåning till nätaggregatet när det är uttaget ur styrenheten. Du kan då få en livsfarlig elstöt. Nättaggregatet är ordentligt jordat endast när det är fast monterat i styrenheten.

A.1.39 U.S. English

DANGER

Disconnect the power cord from the customer's ac supply before disassembling the 5494 power supply.

A.1.40 Brazilian Portuguese

PERIGO

Desconecte o cabo de força da fonte ac do cliente antes de desmontar a fonte de alimentação da 5494.

A.1.41 Canadian French

Danger

Débranchez de la prise le cordon d'alimentation avant de démonter le bloc d'alimentation du 5494.

A.1.42 Chinese

危險！

拆卸 5494 電源供應器前，請切斷其與商用交流電供應器的連接。

A.1.43 Croatian

OPASNOST

Isključi kabel za napajanje iz korisnikovog izmjeničnog izvora prije rastavljanja jedinice za napajanje 5494.

A.1.44 Danish

Pas på!

Tag netledningen ud af stikkontakten hos kunden, før 5494 strømforsyningens enheden afmonteres.

A.1.45 Dutch

Gevaarlijk

Trek de stekker uit het stopcontact vooraleer u de voeding van de 5494 uit elkaar neemt.

A.1.46 Finnish

VAARA

Irrota verkkokohto pistorasiasta, ennen kuin purat 5494-virtalähteen.

A.1.47 French

Danger

Retirez le cordon d'alimentation de la prise secteur avant de démonter le dispositif d'alimentation du contrôleur.

A.1.48 German

VORSICHT

Vor dem Ausbauen des Netzgerätes der IBM 5494 Netzstecker aus der Netzsteckdose ziehen.

A.1.49 Italian

Pericolo

Prima di smontare l'alimentatore 5494, scolare il cavo di alimentazione dalla presa di corrente.

A.1.50 Japanese

危険

5494のパワー・サプライを分解するまえに、お客様のAC電源から電源コードを切り離して下さい。

A.1.51 Korean

위험

5494의 전원 공급구를 분해하기 전에 전원 코드를 고객의 AC공급구로부터 제거하시오.

A.1.52 Norwegian

FARE!

Du må kople nettkablene fra nettspenningstilførselen før du tar ut strømforsyningenheten fra 5494.

A.1.53 Polish

UWAGA!

Przed rozmontowaniem zasilacza 5494
należy wyłączyć przewód zasilający z
gniazdką.

A.1.54 Portuguese

PERIGO

Desligue o cabo de corrente eléctrica da tomada CA do cliente, antes de desmontar a fonte de alimentação do 5494.

A.1.55 Russian

ОСТОРОЖНО

Отсоедините кабель питания от источника
напряжения перед разборкой блока питания 5494.

A.1.56 Spanish

PELIGRO

Desconecte el cable de alimentación de la fuente de alimentación de CA del cliente antes de desmontar la fuente de alimentación de la unidad de control remoto 5494.

A.1.57 Swedish

Varning -- livsfara

Koppla ur nätkabeln innan du demonterar aggregatet.

A.1.58 U.S. English

DANGER

||| Do not use the port tester during electrical storms. |||

A.1.59 Brazilian Portuguese

PERIGO

Não utilize o testador de "port" durante tempestades elétricas.

A.1.60 Canadian French

Danger

N'utilisez pas le testeur de porte pendant un orage.

A.1.61 Chinese

危險！

閃電時，請勿使用埠測試器。

A.1.62 Croatian

OPASNOST

Ne upotrebjavaj ispitivač portova dok traje električka oluja.

A.1.63 Danish

Pas på!

Hjælpeværktøjet til aftestning udgange må ikke benyttes i tordenvejr.

A.1.64 Dutch**Gevaarlijk**

Gebruik de ingangstester niet tijdens een onweer.

A.1.65 Finnish**VAARA**

Älä käytä porttikoetinta ukonilman aikana.

A.1.66 French**Danger**

N'utilisez pas le testeur de câble twinaxial pendant un orage.

A.1.67 German**VORSICHT**

Anschlußtester bei Gewitter nicht verwenden.

A.1.68 Italian**Pericolo**

Durante un temporale, non usare il tester di porta.

A.1.69 Japanese

危険

雷が発生している間は、ポート・テスターを使用しないでください。

A.1.70 Korea

위험

번개치는 동안 포드 테스터를 사용하지 마시오.

A.1.71 Norwegian

FARE!

Bruk ikke porttestern under tordenvær.

A.1.72 Polish

UWAGA!

Nie używać testera portu podczas burzy z piorunami.

A.1.73 Portuguese

PERIGO

Não utilize o aparelho de teste do porto durante uma trovoado.

A.1.74 Russian

ОСТОРОЖНО

Запрещается пользоваться тестером портов во время грозы.

A.1.75 Spanish

PELIGRO

No emplee el medidor de boca durante tormentas eléctricas.

A.1.76 Swedish

Varning -- livsfara

Använd inte porttestaren vid åskväder.

A.2 Caution Notices

Subtopics:

- [A.2.1 U.S. English](#)
- [A.2.2 Brazilian Portuguese](#)
- [A.2.3 Canadian French](#)
- [A.2.4 Chinese](#)
- [A.2.5 Croatian](#)
- [A.2.6 Danish](#)
- [A.2.7 Dutch](#)
- [A.2.8 Finnish](#)
- [A.2.9 French](#)
- [A.2.10 German](#)
- [A.2.11 Italian](#)
- [A.2.12 Japanese](#)
- [A.2.13 Korean](#)
- [A.2.14 Norwegian](#)
- [A.2.15 Polish](#)
- [A.2.16 Portuguese](#)
- [A.2.17 Russian](#)
- [A.2.18 Spanish](#)
- [A.2.19 Swedish](#)
- [A.2.20 U.S. English](#)
- [A.2.21 Brazilian Portuguese](#)
- [A.2.22 Canadian French](#)
- [A.2.23 Chinese](#)
- [A.2.24 Croatian](#)
- [A.2.25 Danish](#)
- [A.2.26 Dutch](#)
- [A.2.27 Finnish](#)
- [A.2.28 French](#)
- [A.2.29 German](#)
- [A.2.30 Italian](#)
- [A.2.31 Japanese](#)
- [A.2.32 Korean](#)
- [A.2.33 Norwegian](#)
- [A.2.34 Polish](#)
- [A.2.35 Portuguese](#)
- [A.2.36 Russian](#)
- [A.2.37 Spanish](#)
- [A.2.38 Swedish](#)

A.2.1 U.S. English

CAUTION:

Switch the power off before removing cables.

A.2.2 Brazilian Portuguese

CUIDADO:

Antes de remover os cabos, desligue a força.

A.2.3 Canadian French

Attention:

Mettez la machine hors tension avant d'enlever des câbles.

A.2.4 Chinese

注意：

拉掉電纜之前，請關閉電源。

A.2.5 Croatian

OPREZ:

Isključi napajanje prije skidanja kabela.

A.2.6 Danish

NB

Sluk for strømmen, før kablerne fjernes.

A.2.7 Dutch

Let op:

Schakel de netspanning uit vooraleer u kabels verwijdert.

A.2.8 Finnish

Varoitus:

Katkaise virta, ennen kuin irrotat kaapelit.

A.2.9 French

Attention:

Mettez le 5494 hors tension avant d'en retirer les câbles.

A.2.10 German

ACHTUNG:

Vor dem Lösen von Kabeln Gerät ausschalten.

A.2.11 Italian

Attenzione:

Prima di rimuovere i cavi, spegnere l'unità.

A.2.12 Japanese

注意:

電源スイッチを切ってから、ケーブルを取り外してください。

A.2.13 Korean

주의 :

레이블을 제거해 | 전에 전원 스위치를 끄시오.

A.2.14 Norwegian

FORSIKTIG:

Slå av nettspenningen før du fjerner noen kabler.

A.2.15 Polish

UWAGA!

Przed odłączeniem przewodów należy wyłączyć zasilanie.

A.2.16 Portuguese

CUIDADO:

Desligue a corrente eléctrica antes de desligar cabos.

A.2.17 Russian

ВНИМАНИЕ:

Отключите питание перед отсоединением кабелей.

A.2.18 Spanish

PRECAUCION:

Apague la alimentación antes de retirar los cables.

A.2.19 Swedish

Varng -- risk för personskada:

Stäng av maskinen innan du kopplar ur kablarna.

A.2.20 U.S. English

CAUTION:

Before removing any FRU, set the power **OFF** at the control unit, unplug all power cords from electrical outlets, and disconnect any interconnecting cables.

A.2.21 Brazilian Portuguese

CUIDADO

Antes de retirar qualquer peça (FRU), **DESLIGUE** a força da unidade de controle, faça o mesmo com todos os cabos em relação as saídas elétricas e desligue também os cabos de interconexão.

A.2.22 Canadian French

ATTENTION

Avant de retirer une FRU, mettez l'unité de contrôle **hors tension** et débranchez tous ses câbles d'alimentation électrique ainsi que tous ses câbles d'interconnexion.

A.2.23 Chinese

注意：

除去任何 FRU 之前，請設定控制單元的電源為
OFF、拉掉所有電源線的插頭，並切斷所有與其
相連的電纜。

A.2.24 Croatian

OPREZ:

Prije skidanja bilo kojeg dijela koji je nadomjestiv kod korisnika (FRU), odspoji sve kabele za napajanje iz električne mreže, te odspoji sve kabele za međusobne veze.

A.2.25 Danish

Pas på!

Før du fjerner udskiftelige enheder (FRU's): **SLUK** for strømmen til kontrolenheden, træk alle netledninger ud af stikkontakterne, og afmontér alle kabler.

A.2.26 Dutch

WAARSCHUWING

Voordat u een ter plaatse te vervangen onderdeel verwijdert, moet u de stroom bij de besturingseenheid UITschakelen, de stekkers van alle snoeren uit het stopcontact trekken en alle verbindingskabels losmaken.

A.2.27 Finnish

Varoitus

Älä irrota vaihdettavia yksiköitä, ennen kuin olet asettanut ohjaimen virtakytkimen **OFF**-asentoon sekä irrottanut kaikki verkkohohdot pistorasioista ja yksiköistä niihin kytketyt kaapelit.

A.2.28 French

ATTENTION

Avant de retirer une FRU, mettez l'unité de contrôle **hors tension** et débranchez tous ses câbles d'alimentation électrique ainsi que tous ses câbles d'interconnexion.

A.2.29 German

ACHTUNG

Vor dem Ausbau einer austauschbaren Funktionseinheit (FRU) Steuereinheit ausschalten, alle Netzstecker aus den Steckdosen ziehen und alle Verbindungsabläufe lösen.

A.2.30 Italian

ATTENZIONE

Prima di togliere qualsiasi FRU, spegnere l'unità di controllo, scollegare tutti i cavi di alimentazione dalle prese elettriche e tutti i cavi di interconnessione.

A.2.31 Japanese

注意:

FRU（導入場所で交換可能な装置）を取り外すまえに、制御装置の電源を切り、電源コンセントから電源コードのプラグをすべて抜いてから、相互接続ケーブルを切り離してください。

A.2.32 Korean

주의:

FRU를 분해하기 전에, 제어장치 전원을 차단(OFF)하고 전원 공급로부터 모든 전원 코드를 제거하시오. 또한 내부의 케이블들도 뽑아주시오.

A.2.33 Norwegian

ADVARSEL

Før du fjerner en erstattningsenhet (FRU), må du slå AV strømmen på styreenheten, trekke ut alle nett kabler fra kontaktene, og koble fra alle sammenkoblede kabler.

A.2.34 Polish

UWAGA!

Przed wyciągnięciem któregokolwiek FRU
należy wyłączyć zasilanie, odłączyć
wszystkie przewody zasilające i rozłączyć
wszystkie wewnętrzne przewody połączonye.

A.2.35 Portuguese

CUIDADO

Antes de remover qualquer unidade substituível no local (FRU), desligue a alimentação (**OFF**) na unidade de controlo, retire todos os cabos de alimentação das tomadas e desligue todos os cabos de interligação.

A.2.36 Russian

ВНИМАНИЕ:

Прежде чем снимать FRU, установите выключатель
питания на блоке управления в положение OFF,
выньте все кабели питания из электрических
розеток и отсоедините все кабели.

A.2.37 Spanish

PRECAUCIÓN

Antes de retirar una FRU, compruebe que el interruptor de alimentación de la unidad de control está en la posición de **APAGADO**, desenchufe todos los cables de las tomas de alimentación y desconecte todos los cables de interconexión.

A.2.38 Swedish

Varning -- risk för personskada

Innan du tar bort någon utbytbar del (FRU) ska du stänga av styrenheten, lossa alla nätkablar från eluttagen och koppla ur alla signalkablar.

B.0 Appendix B. Online Diagnostics and Test Information

This topic describes the different sources of diagnostic information and test information that you can use to help diagnose and repair 5494 problems.

Subtopics:

- [B.1 Overview](#)
 - [B.2 Free-Key Mode](#)
 - [B.3 Online Tests](#)
 - [B.4 Test Procedure](#)
 - [B.5 Online Test Aids](#)
 - [B.6 Display Verification Option](#)
 - [B.7 Configuration Data Description](#)
 - [B.8 Error Log Buffer](#)
 - [B.9 Communication Error Counters \(60 through 6D\)](#)
 - [B.10 Statistical Counters \(6E and 6F\)](#)
 - [B.11 Using System Service Tools](#)
 - [B.12 ERAP Description](#)
 - [B.13 Error Recording Analysis Procedure \(ERAP\)](#)
-

B.1 Overview

The 5494 supplies power-up diagnostics, offline tests, online diagnostic aids, and access to online tests controlled by the AS/400 system. [Figure 31](#) illustrates the overall sequence of operation and indicates stages at which you can enter the various test modes. [Figure 32](#) presents a summary of these test modes and indicates the scope of each type of test.

When you push the 5494 power push button to turn the power **ON** (!), a series of internal tests checks most major functions of the 5494 and loads the code. When an error occurs during the power-on sequence, the LEDs on the operator panel and message codes on the LCD indicate the failure. Failures at this stage of operation usually prevent additional diagnostics from running. You should use the test procedure outlined in "[MAP 0100: Start of Call](#)" in [topic 2.1.1](#) to identify the failing component.

If the power-on sequence completes without detecting an error, you can either start normal operation or run additional tests. Offline test modes include the free-key mode and extended diagnostics. The 5494 automatically starts free-key mode operation for each attached NWS before any sessions are established with the AS/400 system. Extended diagnostics, which must be run from the 5494 operator panel, supply a series of special tests that check the operation of the 5494 and the interface with the AS/400 system.

Once you start a session with the AS/400 system, you can enter either the online test mode or concurrent mode. The online test mode, which is controlled by the AS/400 system, checks various aspects of 5494 operation. Concurrent mode controls no tests but permits you to examine the contents of internal storage registers of the 5494 without stopping all customer sessions. You can access concurrent mode from the 5494 operator panel, an NWS, or a PWS, and view information such as:

- 5494 configuration
- 5494 error log
- 5494 twinaxial-attached devices status
- AS/400 system connection communication configuration.

For a complete description of how to access all the information displayed for concurrent mode, see [Topic 6, "Concurrent Mode from the Operator Panel or Utility Program."](#)

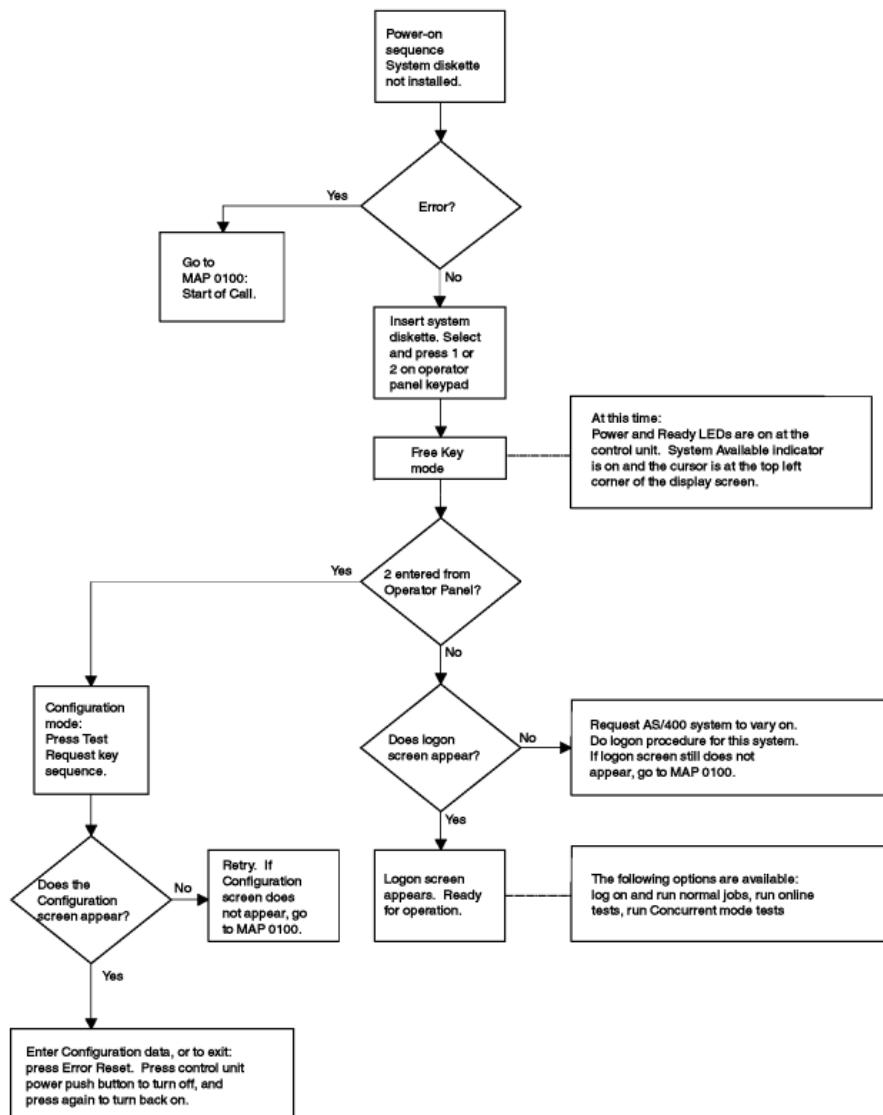
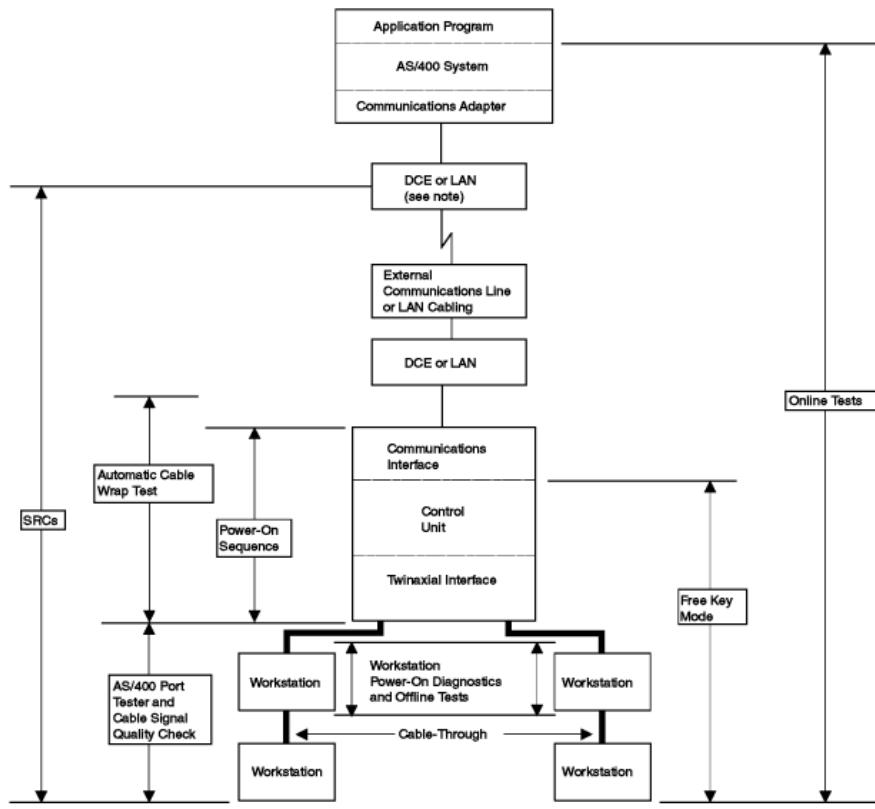


Figure 31. Operation Flowchart



Note: The host system DCE can be an integrated modem or DCE, an external modem or DCE, or an external digital DCE.

Figure 32. Diagnostic Summary

Subtopics:

- [B.1.1 How to Start Communication with the AS/400 System](#)

B.1.1 How to Start Communication with the AS/400 System

The 5494 is now ready to communicate with the AS/400 system. Do the following steps to start communication:

1. Make sure that the communication cable is connected to a modem or DCE. If the customer is using a LAN to communicate with the AS/400 system, make sure that the LAN cable is connected.
2. Turn **ON** (!) the modem or DCE, if one is used.
3. Request the AS/400 system operator to vary on the 5494. If a switched line is used to place a call, take the steps required, using the Link Establishment procedures in the *IBM 5494 Remote Control Unit User's Guide*.
4. The 5494 attempts to establish communication with the AS/400 system. Using the operator panel, press **Req**, type **200**, and press **Enter** to display on the LCD the status of the connection with the AS/400 system. The format of the display is:

where:

- 1** Represents the status of the ALS connection. In the above example, the up arrow indicates that the link to the ALS is active.
- 2** Represents the status of devices attached to the 5494 by twinaxial connection. In the above example, the down arrow indicates that no devices are communicating with the 5494.
- 3** Represents the status of workstations attached to the 5494 through a LAN. In the above example, the up arrow indicates that one or more workstations are communicating with the 5494.
- 4** Represents the status of the connection with the target AS/400 system. In the above example, the up arrow indicates that the connection has been achieved.
- 5** Represents the status of the LU 6.2 controller session. In the above example, the up arrow indicates that the 5494 has an active LU 6.2 session with the AS/400 system.

Notes:

5. The status that is displayed is for the moment the request was made and is **not** automatically updated on the LCD. To check the status again, you must press **Req**, type **200**, and press **Enter** again.
6. If the 5494 is configured for concurrent host attachment, the status of all AS/400 systems can be viewed. See "[Displaying 5494 Host Status and Configuration](#)" in topic [6.2.16](#).

The 5494 is now operating normally and you may start normal operation with the system.

B.2 Free-Key Mode

Free-key mode permits you to enter information using the keyboard and display it on the workstation when the 5494 is not in session with the AS/400 system. Free-key mode can be performed only at an NWS. This mode starts after the power-on sequence completes correctly and permits you to test the keyboard and other functions of the attached workstations. The attached workstations remain in free-key mode until the AS/400 system transmits a logon screen.

Free-key mode does not test the following function keys and, if you press one of these keys during free-key operation:

- If an SRC has been displayed previously, that SRC appears
- If an SRC has **not** been displayed previously, the SRC 0099 appears.
 - Print
 - Help
 - Page up (if your keyboard uses the Roll Up key, no SRC displays.)

- Page down (if your keyboard uses the Roll Down key, no SRC displays.)
- Enter/Rec Adv
- Test Request (backspace or yen key)
- Attn
- Command function keys (Cmd, 1 through 24, see note).

You can reset errors with the Error Reset key.

When the 5494 is attached to an AS/400 system that causes a sign-on screen to appear immediately after the power-on sequence completes, a type of free-key mode is available in a field of the Prime Option Menu of the online tests. (See the workstation maintenance information library.)

Note: See the workstation keyboard template or operator's manual for identification of the command function keys.

B.3 Online Tests

Online tests include workstation test routines that the AS/400 system supplies. When the Prime Option Menu appears, you can select the following:

- Display verification
- Printer verification
- Configuration data
- Error recording analysis procedure (ERAP) data.

You can run online tests on a workstation while other jobs are running on the AS/400 system. However, you must log off the selected workstation before starting the online tests. Specific methods for ending or signing off a job are determined by system operating procedures.

B.4 Test Procedure

To start the online tests, the workstation must be communicating with the 5494 (the System Available indicator is on). The following procedure is correct for most systems:

1. If the System Available indicator is on, go to step [2](#).

If the System Available indicator is not on, make sure that 5494 power is on, and that the Power and Ready LEDs are lit.

2. If a logon screen appears, go to step [3](#).

a. If this workstation is on a switched line, determine if the connection to the AS/400 system has been made. Continue with step [2c](#).

b. If the 5494 is on a leased line, call the system operator and have the 5494 brought online. Continue with step [2c](#).

c. If you cannot get a logon screen, see "[MAP 0100: Start of Call](#)" in topic [2.1.1](#). Otherwise, continue with step [3](#).

3. Enter the Test Request key sequence. See [Appendix D, "Key Sequences."](#)

4. The online test Prime Option Menu should now appear. If it does not appear, check the following list of possible reasons:

- The workstation is not logged off. Check with the operator before you log off the workstation.
- The workstation is offline. Call the system operator.
- An error message about this workstation is waiting on the system console. Call the AS/400 system operator.

5. Use the displayed menus to select the test desired.

6. To exit this procedure, follow the exit procedure supplied on the workstation screens.

The following online test information is only an example. The content of these tests depend on the AS/400 system used, and can be different from this example. Follow the instructions on your display screen to do these tests. See [Figure 33](#) and "[Online Test Aids](#)" in topic [B.5](#).

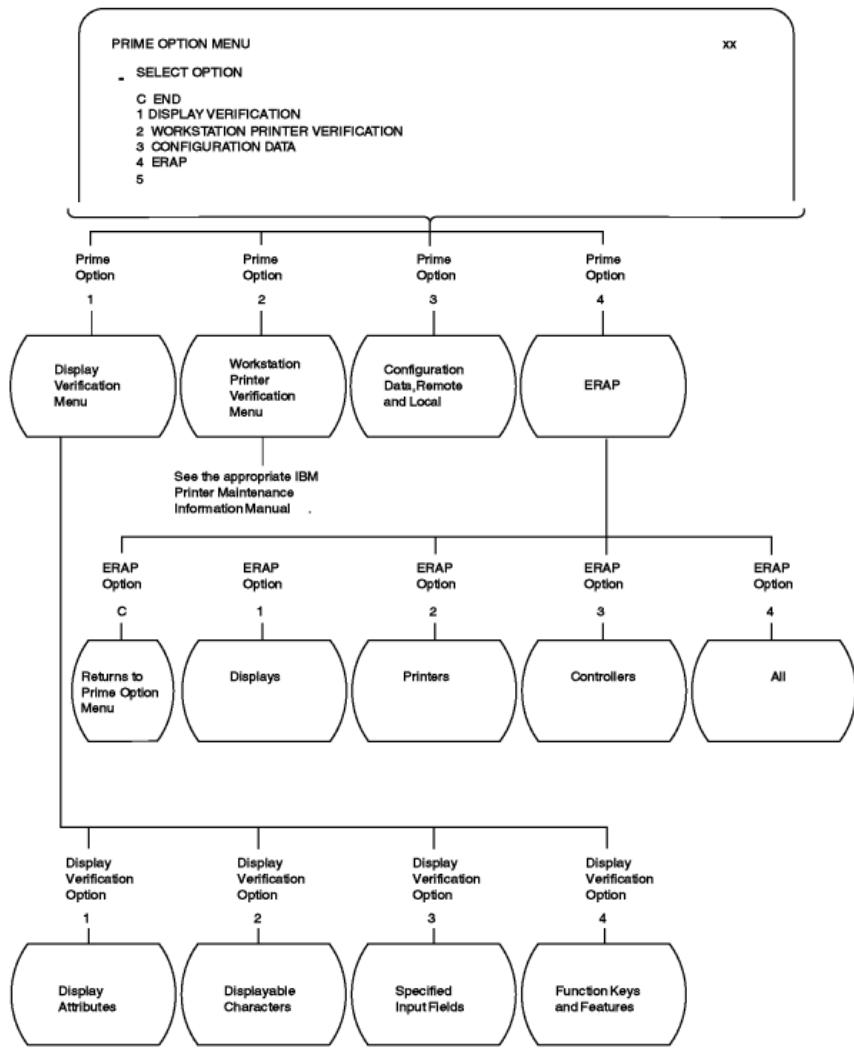


Figure 33. Prime Option Menu

B.5 Online Test Aids

The following descriptions supply general information about online test options. Most of the options are self-explanatory. Read each option carefully. When you select an option, you must also press **Enter** to activate it. How-to-use information is supplied here for the following options:

- Display verification
- Display attributes
- Display characters
- Specified input fields
- Function keys and features.

B.6 Display Verification Option

The Display Verification option allows you to select the following tests:

- The display attributes test
- The displayable characters test
- The specified input fields test
- The function keys test.

The display attributes test and the displayable characters test check the workstation planar.

The specified input fields test checks the 5494.

The function keys test checks the interface with the AS/400 system.

Subtopics:

- [B.6.1 Display Attributes Option](#)
 - [B.6.2 Displayable Characters Option](#)
 - [B.6.3 Specified Input Fields Option](#)
 - [B.6.4 Function Keys and Features Option](#)
-

B.6.1 Display Attributes Option

This option displays the display screen attributes. To use this option to check the attribute operation, do the following:

1. Press the spacebar once to position the cursor to the right of the Specify Attributes statement on the display screen.
2. Type in one of the hexadecimal numbers shown on the screen and press **Enter**.
3. Observe the results that are displayed on the right-hand side of the display screen.

To cancel this screen, follow the exit procedure on the display screen.

B.6.2 Displayable Characters Option

This option (see [Figure 34](#)) shows the characters that are generated when you press their corresponding keyboard keys. The screen on your workstation may not look the same as the one in this example.

Refer to the *IBM 5494 Remote Control Unit Functions Reference* to determine the hexadecimal codes for the characters that change because of the language selected.

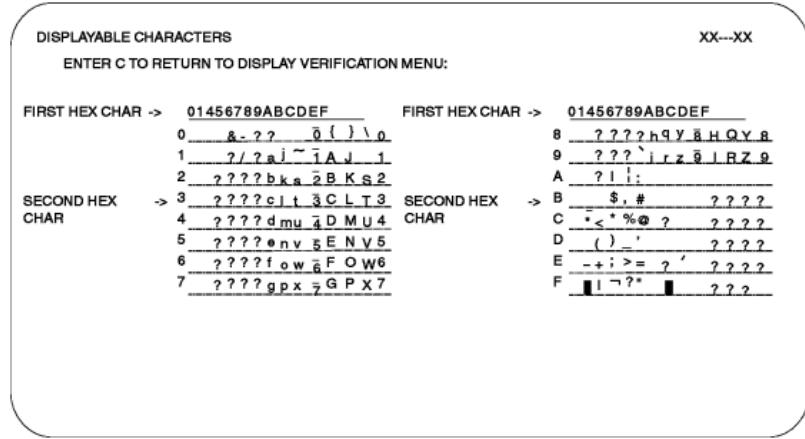


Figure 34. Displayable Characters

B.6.3 Specified Input Fields Option

This option tests the 5494 operations that the workstation uses. Fields of information are entered by the user, read by the 5494, and written back to the display screen next to the input field. To use this screen:

1. Press the spacebar once to position the cursor at the start of the first input field. The cursor moves from the field on the left to the field on the right when you enter the input field information.
2. Enter information in the fields described on the display screen. If you make an error, press **Error Reset** and correct the error.

The field descriptions are as follows:

Alpha or numeric	Type 5 alphabetic or numeric characters.
Alpha only	Type 5 alphabetic characters.
Field exit req	Type 5 alphabetic or numeric characters, and then press Field Exit .
Numeric only	Type 5 numeric characters.
Dup key	Press Dup once. The key code of Dup is shown until the screen is written by the 5494. This field duplicates the numeric-only field.
Signed numeric	Type 4 numeric characters. The cursor remains under the last character typed. Press Field Exit (positive) or Field (negative).
Bypass	The field is automatically bypassed and no entry is needed.
Upper case	Type 5 alphabetic characters.
Rt adj z fill	Type 1 alphabetic or numeric character. Press Field Exit . The character you typed moves to the right of the field and the left 4 positions are filled with zeros.
Self-check for Modulus 10	Type A F 1 2 7 6 5 6 .
Rt adj b fill	Type 1 alphabetic or numeric character. Press Field Exit . The character you typed moves to the right (Rt) of the field and the left 4 positions are filled with blanks.
Self-check for Modulus 11	Type A F 1 2 7 6 5 5 .

Auto enter	Type 5 alphabetic or numeric characters.
------------	--

As soon as you type the last character, the 5494 reads the input fields, sends the information to the system, and writes the information back to the display screen next to the input fields.

B.6.4 Function Keys and Features Option

This screen tests the scroll keys and command function keys. To use this screen:

1. Press and hold **Upper Shift** while you press either **Roll Up** or **Roll Down**. (On some keyboards, press Page Down instead of Roll Up, and Page Up instead of Roll Down. No shift key is needed.)
 2. Observe roll lines 1, 2, 3, and 4. To return lines that have rolled off the display screen, press **Enter**.
 3. Observe the intensity of the numbers on the display screen while you do step [4](#).
 4. Press **PF1**, **F1**, or **CMD1** depending on your keyboard. If the command function key operates correctly, the number 1 on the screen should change from normal to high intensity. Repeat until you have pressed all command function keys PF1 through PF24. All numbers 1 through 24 should be high intensity.
 5. Repeat step [4](#) for a normal display of the numbers.
-

B.7 Configuration Data Description

The following descriptions of configuration data are for remote and local stations.

Subtopics:

- [B.7.1 Remote Stations](#)
 - [B.7.2 Local Stations](#)
-

B.7.1 Remote Stations

The following are descriptions of the configuration data for remote stations:

- **Line** is the communication line number that this workstation is on.
- **Station Addr** is the address for the 5494. The station address permits the data communication system to address a specific remote control unit.

- **LSID** (logical station identification) permits the data communication system to communicate to the 5494 which specific workstation the system wants to communicate with. The network address for a workstation is the last 6 bits of the LSID.
 - **Logical ID** is the name the data communication system uses to address a specific workstation.
 - **Description** is the type of device being addressed.
-

B.7.2 Local Stations

The following are descriptions of the configuration data for local workstations:

- **Device Addr** is the address of the 5494.
 - **Unit Addr** is the address of the workstations assigned to the 5494. The first digit is the physical port or cable number, and the second digit is the station address.
 - **Logical ID** is the name the data communication system uses to address the workstations assigned to the 5494.
 - **Description** is the type of device being addressed.
-

B.8 Error Log Buffer

The error log buffer is a 128-byte buffer in dynamic RAM (DRAM) where SRCs from attached workstations and some selected 5494 SRCs are accumulated and then sent to the AS/400 system for storage. The error log buffer retains entries that have been sent to the AS/400 system until they are overwritten.

Subtopics:

- [B.8.1 Error Log Buffer Information](#)
-

B.8.1 Error Log Buffer Information

Error log entries in the error log buffer have the following format:

LSID,XXYY,S0,S1,S2,S3,S4

where:

LSID
= logical session ID

Note: For 42xxxx, 43xxxx, and 44xxxx error codes, the LSID is in the low six bits of the field and the high two bits identify the AS/400 system experiencing the error:

- 00 = H1, 40 = H2, 80 = H3, and C0 = H4.

XXYY

= SRC (See [Topic 3, "5494 Message Codes and System Reference Codes \(SRCs\)."](#))

XX =

device type
 00 = 5494
 01 = display station
 02 = printer
 03 = could not determine if printer or display station
 10-99 = 5494 (6-digit SRC)

YY =

error detail

S0 through S4 sense bytes

- SRCs 0040 through 0045, 0047, 0048, and 0050 through 0053 have no sense bytes.
- SRCs 0046 through 0054 have 4 sense bytes.
- SRCs 0070 through 0098 have 5 sense bytes.
- SRCs 01xx and 02xx have 5 sense bytes.

X.21, X.25, SNA, LAN, Frame Relay, and V.25 bis SRCs are 6-digit codes and appear in fields *XXYY* and S0. *XX* is equal to or greater than 10 in all 6 digit codes.

B.9 Communication Error Counters (60 through 6D)

SDLC errors that can be corrected and recovered are counted, and the cumulative total is stored in the 5494. When any counter reaches 255, or when the AS/400 system requests maintenance statistics, each counter that has a value more than zero has its contents converted to an SRC. The code is sent to the AS/400 system as a 5494 error log entry (0060 - 006D).

Note: These SRCs never appear in the 5494 error log or on any workstation. The counters are reset when the contents are formatted into an SRC. These counters give an indication of communication interface line quality and recovery activity within the 5494.

See "[Communication Error and Statistical Counters" in topic B.10.1](#) for an explanation of each communication error counter. See "[Displaying 5494 Communication and Statistical Counters" in topic 6.2.6](#) for instructions on displaying the communication error counters at the 5494 operator panel. See "[C2 Screen" in topic 7.4](#) for instructions on displaying the communication error counters on the C2 concurrent mode screen at an NWS.

B.10 Statistical Counters (6E and 6F)

The 5494 has two statistical counters that contain 4 bytes each. These counters are used to count the number of valid Information frames received and transmitted.

Note: These counters never appear in the 5494 error log or on any workstation. The contents of these counters are formatted into SRCs 006E and 006F and sent to the AS/400 system when the communication counters are sent. The counters are reset when the contents are formatted into an SRC.

See "[Communication Error and Statistical Counters](#)" in topic [B.10.1](#) for an explanation of each statistical counter. See "[Displaying 5494 Communication and Statistical Counters](#)" in topic [6.2.6](#) for instructions on displaying the statistical counters at the 5494 operator panel. See "[C2 Screen](#)" in topic [7.4](#) for instructions on displaying the statistical counters on the C2 concurrent mode screen at an NWS.

Subtopics:

- [B.10.1 Communication Error and Statistical Counters](#)
-

B.10.1 Communication Error and Statistical Counters

60

Explanation: Test Frames In Error (SDLC/X.21)

When the 5494 is configured to use either SDLC or X.21 protocols, this counter maintains a cumulative record of test frames received with CRC errors.

RNR Sent (X.25)

When the 5494 is configured to communicate over an X.25 network, this counter maintains a cumulative record of RNR commands sent.

61

Explanation: Test Frames Without Error (SDLC/X.21)

When the 5494 is configured to use either SDLC or X.21 link-level protocols, this counter maintains a cumulative record of valid test frames received.

RNR Received (X.25)

When the 5494 is configured to operate in conjunction with an X.25 network, this counter maintains a cumulative record of RNR commands received.

62

Explanation: Communication Underrun

This counter increments during transmit operations when the communication adapter fails to supply the next character to the transmit buffer in time for that character to be sent out on the line.

63

Explanation: Communication Adapter Overrun

This counter increments during receive operations when the link adapter fails to transfer 1 byte of data to storage before the next character is received from the line.

64

Explanation: Data Carrier Detect Lost (EIA, V.24/V.28, or V.35) or I Signal Lost (X.21)

This counter increments if the signal is lost for 2 bit-times during a receive operation and an error is detected in the newly received data frame.

65

Explanation: RFS Signal Lost (EIA, V.24/V.28, or V.35)

This counter increments if the RFS signal becomes inactive for 2 bit-times during a transmit operation, and the host system response indicates that an error was detected.

66

Explanation: DSR Signal Lost (EIA, V.24/V.28, or V.35) or DCE Is Not Ready (X.21)

This counter increments if the line becomes inactive for more than 2 bit-times during leased operation.

67

Explanation: Frame Sequence Error Counter (SDLC/X.21)

This counter increments when a frame sequence error (Ns and Nr do not match) is detected.

REJ Command Sent (X.25 only)

The counter increments each time the 5494 transmits a REJECT command.

68

Explanation: Transmit Retry (SDLC/X.21)

This counter increments each time one or more frames must be retransmitted due to a frame sequence error.

REJ Command Received (X.25 only)

This counter increments each time the 5494 receives a REJECT command from the host system.

69

Explanation: Frame Check Sequence (FCS) Error Counter

This counter increments when the FCS character sent with a newly received frame does not match the character calculated by the 5494.

6A

Explanation: Frame Aborts Counter

This counter increments each time the 5494 receives an abort frame.

6B

Explanation: Reserved

6C

Explanation: T1 Timeout (X.25 only)

This counter increments if an acknowledgment frame is not received within a selected retry interval (T1 timeout). The 5494 then retries the operation. After a selected number of retries, a 0053 SRC is posted in the error log. Both the retry interval and the number of retries are selected in CSU field 7.

SHM Call Collision (X.21)

This counter increments each time a call collision occurs during SHM operation.

6D

Explanation: IPDU Retransmission (X.25 only)

This counter increments each time an ELLC inter-network protocol data unit (IPDU) is retransmitted.

IA5 Parity Error (X.21)

This counter increments each time a parity error is detected in an IA5 code received from the X.21 network.

Explanation: Transmitted I Frames

This counter increments for each I frame transmitted to the host system.

Explanation: Received I Frames

This counter increments for each valid I frame received from the host system.

B.11 Using System Service Tools

To access the AS/400 system error log utility:

1. Sign on to the AS/400 system and access the AS/400 system main menu.
2. At the main menu, select the problem handling option.
3. Select the system service tools (SST) option from the problem-handling menu options.

Note: You must be authorized to use this option.

4. Select the start a service tool option.

This option displays service tools that you can start from the SST menu.

5. Select the error log utility option.

This option lets you display or print errors that the system has detected. The error log utility formats and gives a summary of system error log information.

6. Select the display or print error log option.

7. Select communication for the error log, and then enter the dates of the errors you want displayed.

8. For the report type, select the option for displaying a summary of the error log.

9. On the Display Summary of Communications Entries screen, to display or print the errors logged by the 5494, select option **5** for the resource ***NONE/5X94**.

10. Select option **5** on both the summary of line entries screen and summary of controller entries screen for the resource (controller, display, or printer) of which you want to display errors. A partial report for the resource is displayed.

11. To display a detailed report for the reference codes shown on the partial report screen, select option **5**.

The reference code field is the first 4 digits of the 5494 SRC. The error code field contains the following information:

- For communication error and statistical counters, the error code field contains the count.
- For 6-digit SRCs, the error code field contains the last 2 digits of the SRC and any additional available sense data.
- For all other SRCs, the error code field contains any available sense data.

(Refer to *AS/400 Service Guide - 9402* for more details, if necessary.)

B.12 ERAP Description

Use the ERAP option on the Prime Option Menu of the online tests to display or print the errors that are logged in the AS/400 system for the attached workstations and printers. See "[Online Tests](#)" in topic **B.3**. A description of the data fields is given in the following sections.

["ERAP Table for Attached Workstations" in topic B.13.1](#) shows the error log for attached workstations. ["ERAP Table for Printers" in topic B.13.2](#) shows the error log for attached printers. Printouts from other AS/400 systems contain the same information, but the arrangement of the data is usually different.

B.13 Error Recording Analysis Procedure (ERAP)

The following describes the ERAP options:

- If you select the end option, the ERAP function ends. If you select the End option and press **Enter**, the screen returns to the Sign On menu.
- If you select the All option, the ERAP tables appear one at a time for all devices on the line. When the error history table for the first device appears and you press **Enter**, the I/O counter table for the second device appears. This sequence repeats until the error history table for the last device on the line appears.
- If you select the displays option or the option for printers, you must also select a specific device. The I/O counter table, the error counter table, and the error history table appear for the selected device only.

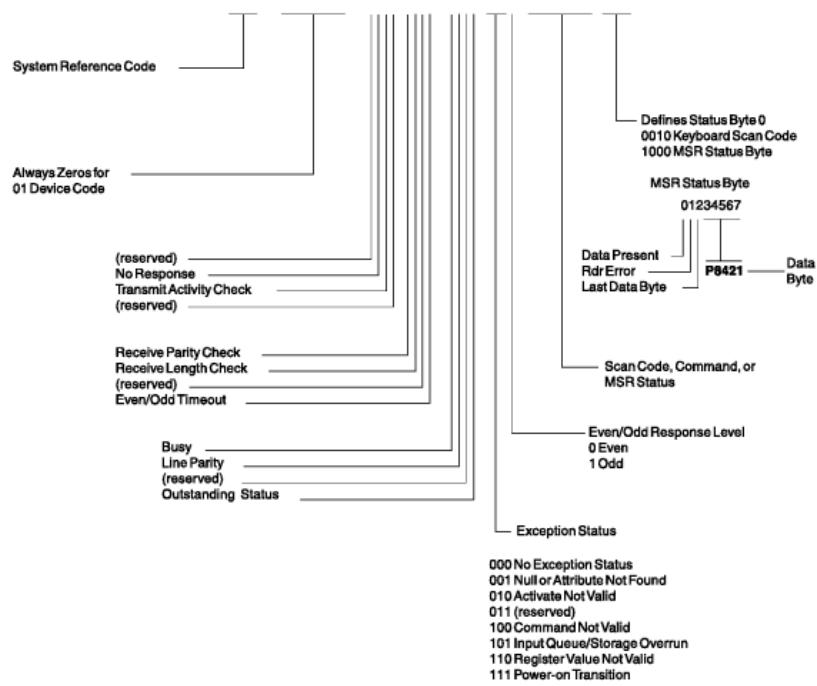
Subtopics:

- [B.13.1 ERAP Table for Attached Workstations](#)
 - [B.13.2 ERAP Table for Printers](#)
-

B.13.1 ERAP Table for Attached Workstations

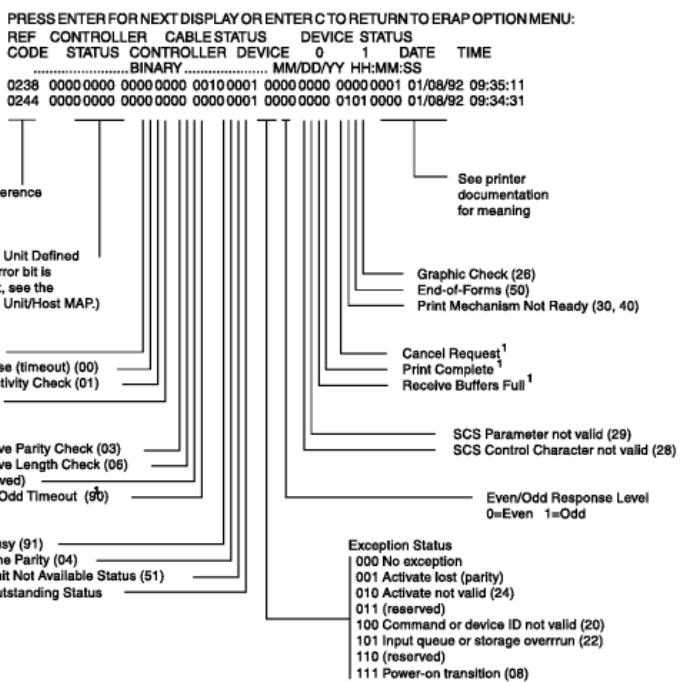
ERROR HISTORY TABLE DSP01 W1
 ERAP DATA FOR DISPLAY DSP02

PRESS ENTER FOR NEXT DISPLAY OR ENTER C TO RETURN TO ERAP OPTION MENU:
 REF CONTROLLER CABLE STATUS DEVICE STATUS
 CODE STATUS CONTROLLER DEVICE 0 1 DATE TIME
 BINARY MM/DD/YY HH:MM:SS
 0100 0000 0000 0100 0000 0000 0001 0000 0000 0000 0000 01/08/92 093531



B.13.2 ERAP Table for Printers

ERROR HISTORY TABLE DSP01
ERAP DATA FOR PRINTER PPT01



¹Presence of these bits depends on the system to which the printer is attached.

C.0 Appendix C. Supported Attachments

Subtopics:

- [C.1 Equipment Required for a Data Communication System](#)

C.1 Equipment Required for a Data Communication System

A typical data communication system consists of the following major components:

- An AS/400 system
- A 5494 Remote Control Unit
- Workstations
- A communication network, including modems or data circuit-terminating equipment (DCE), and possibly a Token-Ring or Ethernet network.

This appendix describes the AS/400 systems, workstations, modems and DCEs, other devices, and network types supported by the 5494. If you need further information about data communication, refer to *Introduction to Data Communications*, SR28-0263, and to the *AS/400 Communications Network Planning Guide*, GC41-9861.

Subtopics:

- [C.1.1 AS/400 Systems Programming Support](#)
- [C.1.2 Twinaxial \(5250\) Workstations](#)
- [C.1.3 Workstations Attached through a LAN Gateway Configuration](#)

- [C.1.4 Other Devices](#)
 - [C.1.5 Modems and DCEs](#)
 - [C.1.6 Networks](#)
 - [C.1.7 Ethernet Cabling](#)
-

C.1.1 AS/400 Systems Programming Support

For all 5494 releases, OS/400 Version 2 Release 1 Modification 1 or higher is required.

| If you are using the Twinaxial Expansion Kit, OS/400 Version 2 Release 3
| or later is required for 56-device support.

For full function of the 5494 Release 3.0, OS/400 Version 3 Release 1 or higher is required. This AS/400 release includes support for automatic configuration of the RWS controller and attached devices, shared addressing, 5250 fax and image, and 5250 video delivery.

C.1.2 Twinaxial (5250) Workstations

The 5494 supports the following workstations for direct attachment with any cable that supports 5250 data stream communication:

Display Stations:

- IBM 3179 Color Display Station Model 2
- IBM 3180 Display Station Model 2
- IBM 3196 Display Station Models A10, A20, B10, and B20
- IBM 3197 Display Station Models C10, C20, D10, D20, D40, W10, and W20
- IBM 3476 InfoWindow Display Station Models AA0, AB0, A10, A20, BA0, BB0, BAx([1](#)), BGx, B10, B20, EAx, and EGx
- IBM 3477 InfoWindow Display Station Models CA0, CB0, C1y([2](#)), C2y, DA0, DB0, D1y, D2y, EA0, EB0, E1y, E2y, FAx, FCx, FDx, FGx, HAx, HCx, HDx, HGx, J, K, S, T, WA0, WB0, W1y, and W2y
- IBM 3486 InfoWindow II Display Station Models BAx, BGx, Axx, and Bxx
- IBM 3487 InfoWindow II Display Station Models HAx, HCx, HGx, Cxx, Dxx, Exx, and Wxx
- IBM 3488 InfoWindow II Display Station Model H1x, V1x, V4x, V5x, Axx, Bxx, Cxx, Dxx, Exx, 0Ax, 0Bx, 1Ax, 1Bx, 2Ax, 2Bx, 3Ax, and 3Bx
- IBM 3489 InfoWindow II Display Station Models V1x, V4x, V5x, Axx, Bxx, Cxx, Dxx, and Exx,
- IBM 5251 Display Station Models 11 and 999

- IBM 5291 Display Station Models 1 and 2
- IBM 5292 Color Display Station Models 1 and 2
- IBM 5295 Display Station Models 1, 2, 0C2, 0H2, GP3, and LK1.

Personal Computers:

- IBM PC or PS/2 computer running:
 - Enhanced 5250 Emulation Program
 - IBM System 36/38 Workstation Emulation Program
 - PC Support/400 Version 2 Release 2.0 or higher
 - Client Access/400 (formerly PC Support/400)
 - Networking Services/Disk Operating System (DOS)
 - Operating System/2 (OS/2) Extended Edition (EE) 1.3
 - OS/2 with Extended Services (ES) 1.0 or higher
 - OS/2 with Communications Manager/2
- RISC System/6000 (RS/6000)
 - IBM 5250 Emulation
- IBM Personal System/55 (PS/55) computer running :
 - Japanese 5250 PC emulation programs
 - IBM Japanese 5250 Personal Computer/2 AD (5250 PC/2 AD) Support
 - Japanese 5250 Workstation Program Version 3.0 or higher
 - OS/2 EE J1.3
 - OS/2 with ES J1.0 or higher
- IBM BS/150 System computer running Japanese 5250 PC emulation programs.

Printers:

- IBM 3112 Page Printer Model 001
- IBM 3116 Page Printer Models 001, 002, and 003
- | IBM 3130 Advanced Function Printer Models 01S, 02S, 02D, and 03S
- IBM 3812 Printer Models 1 and 2
- IBM 3816 Printer Models 01D and 01S
- IBM 3912 Printer Models AS0 and AS1
- IBM 3916 Printer Models AS0 and AS1
- IBM 3930 Page Printer Models 02S and 02D (with F/C 9217)
- | IBM 3935 Page Printer Model 001
- IBM 4028 Printer Model AS1
- IBM 4210 Printer Model 1
- IBM 4214 Printer Model 2
- IBM 4224 Printer Models 101, 102, 1C2, 1E2, and 1E3
- IBM 4230 Printer Models 101, 102, 111, 1S2, 4S3, and 4I3
- IBM 4234 Printer Models 2, 8, and 012
- | IBM 4247 Serial Impact Printer Model 001
- IBM 5219 Printer Models D01 and D02
- IBM 5224 Printer Models 1 and 2
- IBM 5225 Printer Models 1, 2, 3, and 4
- IBM 5227 Printer Models 1, 2, 3, and 5
- IBM 5256 Printer Models 1, 2, and 3
- IBM 5262 Printer Model 1

- IBM 5317 Printer Model 1
- IBM 5327 Printer Models 1, 2, and 3
- IBM 6252 Impactwriter Models T08 and T12
- IBM 6262 Impact Printer Models T12, T14, and T22
- | IBM 6400 Printer Models 004, 008, and 012
- IBM 6408 Line Matrix Printer Model CT0 and CTA
- IBM 6412 Line Matrix Printer Models CT0 and CTA.
- | IBM 4312 Network Printer 12 Model 001, 002, and 003
- | IBM 4317 Network Printer 17 Model 001 and 002
- | IBM 4324 Network Printer 24 Model 001 and 002

(1) The letter x represents the specific model designation (1 or 3).

(2) The letter y represents the specific model designation (0 through 9).

C.1.3 Workstations Attached through a LAN Gateway Configuration

The 5494 supports the following workstations attached to the 5494 through Token-Ring Gateway or Ethernet Gateway:

- A personal computer or PS/2 running one of the following programs:
 - PC Support/400 Version 2 Release 2.0 or higher
 - Client Access/400 Version 3 Release 1.0
 - Networking Services/DOS
 - OS/2 EE 1.3
 - OS/2 with ES 1.0 or higher
 - OS/2 with Communications Manager/2 Version 1.0 or higher.
- An RS/6000 system running Connection Program/400.
- A PS/55 computer running one of the following programs:
 - Japanese 5250 Workstation Program Version 3.0 or higher
 - OS/2 EE J1.3
 - OS/2 with ES J1.0 or higher.

C.1.4 Other Devices

The 5494 also supports the following devices:

- IBM 5208 (ASCII-5250) Line Protocol Converter
- IBM 5209 (3270-5250) Line Protocol Converter
- ROLMbridge 5250 Line Protocol Converter Model 46815B
- IBM 5299 Model 3 Terminal Multiconnector
- IBM 6299 Hub Models 100, 200, 8DB, 8TC, and 900
- IBM 6611 Network Processor
- IBM 7820 ISDN Terminal Adapter
- IBM 8209 LAN Bridge
- IBM 8222 6-Port 10BASE-T Workgroup Hub
- IBM 8228 Multistation Access Unit
- IBM 8230 Controlled Access Unit.

C.1.5 Modems and DCEs

If you are communicating with your AS/400 system through an analog communication network, the 5494 and the AS/400 system are attached to the communication line through modems. The transmitting modem converts the digital signals to analog signals and transmits these signals over the communication line. The receiving modem converts the analog signals back to digital signals. The transmitting modem and the receiving modem must be compatible. For example, the modems must transmit data at the same speed and use the same modulation methods. The 5494 supports the following IBM modems:

- IBM 3833 Model 1
- IBM 3834 Model 1
- IBM 3863 Models 1 and 2
- IBM 3864 Models 1 and 2
- IBM 3865 Models 1 and 2
- IBM 3868 Models 1, 2, 3, and 4
- IBM 3872 Model 1
- IBM 3874
- IBM 3875
- IBM 5811 Models 10, 18, 20, and 28
- IBM 5812 Models 10 and 18
- IBM 5821 Model 10
- IBM 5822 Model 10
- IBM 5842 Model 1
- IBM 5853 Model 1
- IBM 5858
- IBM 5865 Models 1, 2, and 3
- IBM 5866 Models 1, 2, and 3
- IBM 5868 Models 51, 52, 61, and 62
- IBM 7855 Model 10
- IBM 7861
- IBM 7868.

If your network is an X.21 Public Data Network or an X.25 Packet Switched Public Data Network, your 5494 and the AS/400 system are attached to the network through DCEs. The network may provide you with DCEs. If not, your network supplier should give you information for ordering this equipment. Contact your network supplier for more information.

C.1.6 Networks

The 5494 using the EIA 232D (CCITT V.24/V.28) communication cable can attach to the following types of networks:

- Public or private, leased or switched, point-to-point or multipoint, analog lines using a modem
- Dataphone Digital Service (DDS) using a Data Service Unit (DSU) with an EIA 232D interface
- X.21 Circuit-Switched or Leased-Circuit Data Networks using an X.21 bis (V.24/V.28) DCE
- X.25 Packet-Switched Data Networks using an X.21 bis (V.24/V.28) DCE
- SNA Subarea Network or an APPN network.
- | Integrated Services Digital Network via attached Terminal Adapter

The 5494 using the CCITT X.21 communication cable can attach to the following types of networks:

- X.21 Circuit-Switched Data Networks using an X.21 DCE
- X.21 Leased-Circuit Data Networks using an X.21 DCE (point-to-point or multipoint)
- X.25 Packet-Switched Data Networks using an X.21 DCE
- Frame-Relay Networks using an X.21 DCE
- | Integrated Services Digital Network via attached Terminal Adapter
- T1 Leased-Circuit using a fractional T1 multiplexer
- SNA Subarea Network or an APPN network.

The 5494 using the CCITT V.35 communication cable can attach to the following types of networks:

- DDS using a DSU with a V.35 interface
- Point-to-point leased line
- Broadband analog networks
- Point-to-point high-speed private line using limited-distance modems
- X.21 Circuit-Switched or Leased-Circuit Data Networks using an X.21 bis (V.35) DCE
- X.25 Packet-Switched Data Networks using an X.21 bis (V.35) DCE
- Frame-Relay Network using a V.35 interface
- T1 Leased-Circuit using a fractional T1 multiplexer.
- SNA Subarea Network or an APPN network.
- | Integrated Services Digital Network via attached Terminal Adapter

The 5494 with a Token-Ring adapter installed, communicates with the ring at a speed of either 4 Mbps or 16 Mbps.

The 5494 with an Ethernet adapter installed, communicates with IEEE 802.3 or DIX Version 2.0 frame formats and attaches to the Ethernet network using 10BASE2, 10BASE5, or 10BASE-T media.

C.1.7 Ethernet Cabling

The 5494 Ethernet Upgrade Kit does not contain an Ethernet cable. The customer must provide one of the following:

- A category 3, 4, or 5 cable with RJ-45 connectors for use with the telephone twisted-pair (10BASE-T) media.

The maximum length of twisted-pair cable between the concentrator and the 5494 is 328 feet (100 meters).

- An RG-58 standard coaxial cable (IEEE standard 802.3 10BASE2) with bayonet connectors (BNCs) for use with thin-coaxial media.

The maximum length of thin coaxial cable between repeaters is 606.8 feet (185 meters). The minimum length of thin coaxial cable between repeaters is 19.5 inches (0.5 meters).

Note: A BNC T-type connector is shipped with the 5494 Ethernet Upgrade Kit.

- A shielded twisted-pair drop cable with 10BASE5 attachment unit interface (AUI) connectors for use with Ethernet networks that have external transceivers.

The maximum length of drop cable between transceivers is 165 feet (50 meters).

Note: An IBM Mini AUI-to-AUI Adapter cable (P/N 59G9004) is also required.

For more information about Ethernet cabling, refer to the *IBM LAN Cabling System Planning and Installation Guide*.

D.0 Appendix D. Key Sequences

The key sequences in this topic are operations that permit you to do the following tests and procedures:

- The configuration procedures in "[Online Tests](#)"
- The NWS concurrent screens in [Topic 7, "Concurrent Mode from an NWS \(Online\)."](#)

The keys involved in the operations vary, depending on the type of workstation attached to the control unit and on the operation.

[Figure 35 in topic D.1](#) through [Figure 41 in topic D.7](#) show keyboards supported by the 5494. Go to the figure for the type of keyboard your workstation uses.

The key sequence function keys are shaded in the figures. The actual keytop characters on your keyboard may not be the same as the ones shown in the figure due to language differences.

Subtopics:

- [D.1 IBM Typewriter Keyboard](#)
- [D.2 IBM 122-Key Keyboard](#)
- [D.3 IBM Enhanced \(102-Key\) Keyboard](#)
- [D.4 IBM PC, Personal Computer XT \(PC XT\), and Portable PC Keyboard](#)
- [D.5 IBM Personal System/2 Computer Keyboard](#)
- [D.6 IBM Personal Computer AT \(PC AT\) Keyboard](#)
- [D.7 IBM Typewriter Data Entry Keyboard](#)

D.1 IBM Typewriter Keyboard

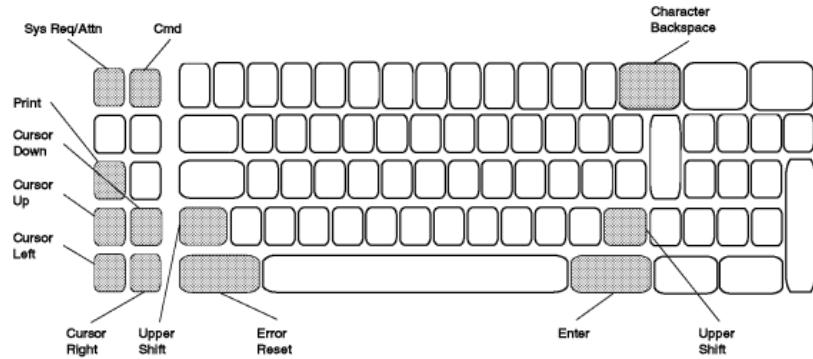


Figure 35. IBM Typewriter Keyboard

Subtopics:

- [D.1.1 Test Request Key Sequence](#)
 - [D.1.2 System Request Key Sequence](#)
 - [D.1.3 Local Copy Key Sequence](#)
-

D.1.1 Test Request Key Sequence

1. Press the **Error Reset** key.
 2. Press the **Cmd** key.
 3. Press the **Character Backspace ()** key.
-

D.1.2 System Request Key Sequence

1. Press the **Error Reset** key.
 2. Press and hold the **Upper Shift** key.
 3. Press the **Sys Req/Attn** key.
-

D.1.3 Local Copy Key Sequence

1. Press the **Print** key.
-

D.2 IBM 122-Key Keyboard

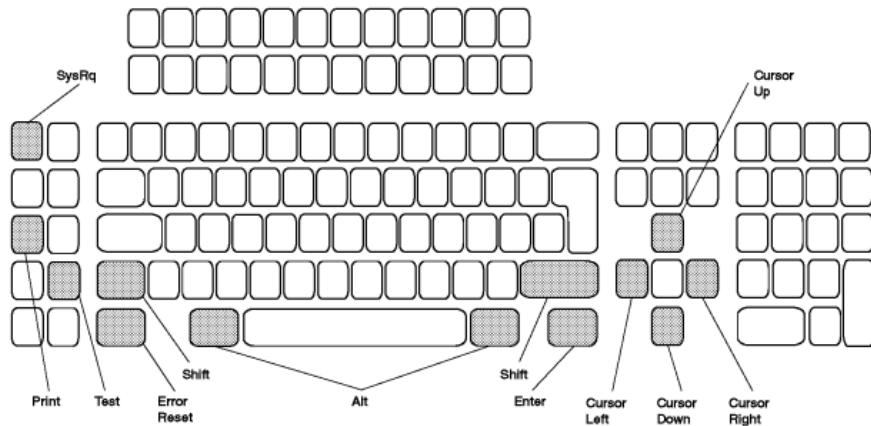


Figure 36. IBM 122-Key Keyboard

Subtopics:

- [D.2.1 Test Request Key Sequence](#)
 - [D.2.2 System Request Key Sequence](#)
 - [D.2.3 Local Copy Key Sequence](#)
-

D.2.1 Test Request Key Sequence

1. Press the **Error Reset** key.
 2. Press and hold the **Alt** key.
 3. Press the **Test** key.
-

D.2.2 System Request Key Sequence

1. Press the **Error Reset** key.
 2. Press and hold the **Shift** key.
 3. Press the **SysRq** key.
-

D.2.3 Local Copy Key Sequence

1. Press the **Print** key.
-

D.3 IBM Enhanced (102-Key) Keyboard

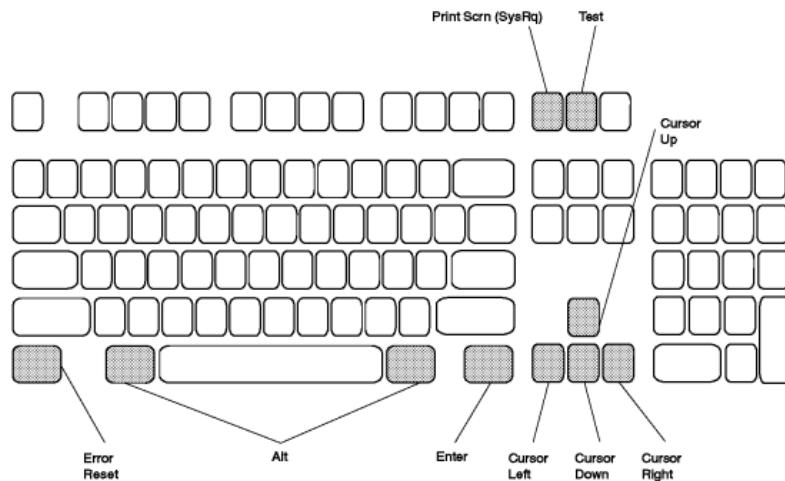


Figure 37. IBM Enhanced (102-Key) Keyboard

Subtopics:

- [D.3.1 Test Request Key Sequence](#)
- [D.3.2 System Request Key Sequence](#)
- [D.3.3 Local Copy Key Sequence](#)

D.3.1 Test Request Key Sequence

1. Press the **Error Reset** key.
2. Press and hold the **Alt** key.
3. Press the **Test** key.

D.3.2 System Request Key Sequence

1. Press the **Error Reset** key.
2. Press and hold the **Alt** key.
3. Press the **Print Scrn (SysRq)** key.

D.3.3 Local Copy Key Sequence

1. Press the **Print Scrn (SysRq)** key.

D.4 IBM PC, Personal Computer XT (PC XT), and Portable PC Keyboard

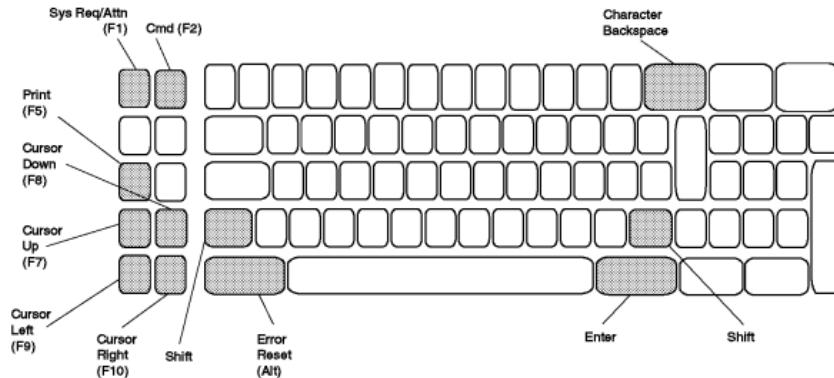


Figure 38. IBM PC, PC XT, and Portable PC Keyboard

Subtopics:

- [D.4.1 Test Request Key Sequence](#)
 - [D.4.2 System Request Key Sequence](#)
 - [D.4.3 Local Copy Key Sequence](#)
-

D.4.1 Test Request Key Sequence

1. Press the **Error Reset (Alt)** key.
 2. Press the **Cmd (F2)** key.
 3. Press the **Character Backspace ()** key.
-

D.4.2 System Request Key Sequence

1. Press the **Error Reset (Alt)** key.
 2. Press and hold the **Shift** key.
 3. Press the **Sys Req/Attn (F1)** key.
-

D.4.3 Local Copy Key Sequence

1. Press the **Print (F5)** key.
-

D.5 IBM Personal System/2 Computer Keyboard

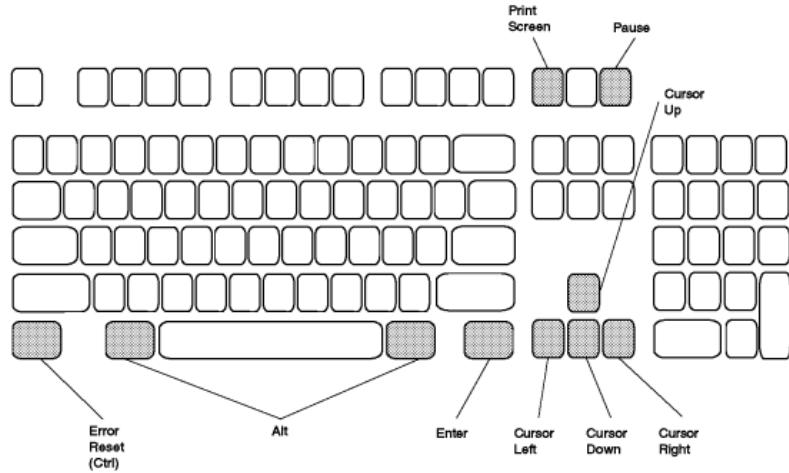


Figure 39. IBM PS/2 Computer Keyboard (Using IBM System 36/38 Workstation Emulation Program)

Subtopics:

- [D.5.1 Test Request Key Sequence](#)
- [D.5.2 System Request Key Sequence](#)
- [D.5.3 Local Copy Key Sequence](#)

D.5.1 Test Request Key Sequence

1. Press the **Error Reset (Ctrl)** key.
2. Press and hold the **Alt** key.
3. Press the **Pause** key.

D.5.2 System Request Key Sequence

1. Press the **Error Reset (Ctrl)** key.
2. Press and hold the **Alt** key.
3. Press the **Print Screen** key.

D.5.3 Local Copy Key Sequence

1. Press the **Print Screen** key.

Note: When running the 5250 Enhanced Emulation Program, if you are using keyboard template KBEPC.PRO, use this key sequence. If you are using keyboard template KB5250.PRO or KBA5250.PRO, use the key sequence for "[IBM PC, Personal Computer XT \(PC XT\), and Portable PC Keyboard](#)" in topic D.4.

D.6 IBM Personal Computer AT (PC AT) Keyboard

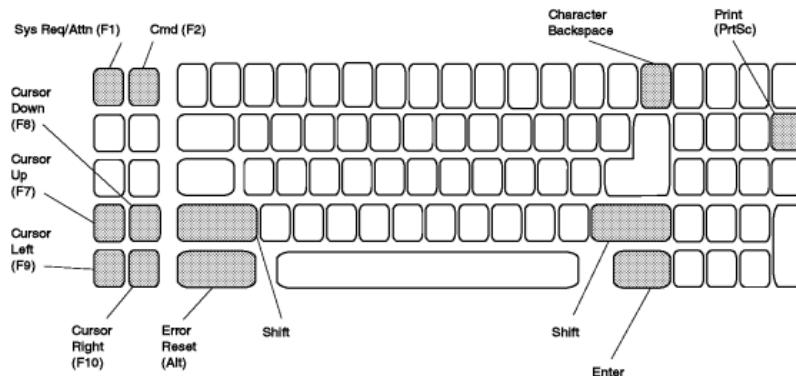


Figure 40. IBM Personal Computer AT Keyboard

Subtopics:

- [D.6.1 Test Request Key Sequence](#)
 - [D.6.2 System Request Key Sequence](#)
 - [D.6.3 Local Copy Key Sequence](#)
-

D.6.1 Test Request Key Sequence

1. Press the **Error Reset (Alt)** key.
 2. Press the **Cmd (F2)** key.
 3. Press the **Character Backspace ()** key.
-

D.6.2 System Request Key Sequence

1. Press the **Error Reset (Alt)** key.
 2. Press and hold the **Shift** key.
 3. Press the **Sys Req/Attn (F1)** key.
-

D.6.3 Local Copy Key Sequence

1. Press and hold the **Shift** key and press the **Print (PrtSc)** key.

D.7 IBM Typewriter Data Entry Keyboard

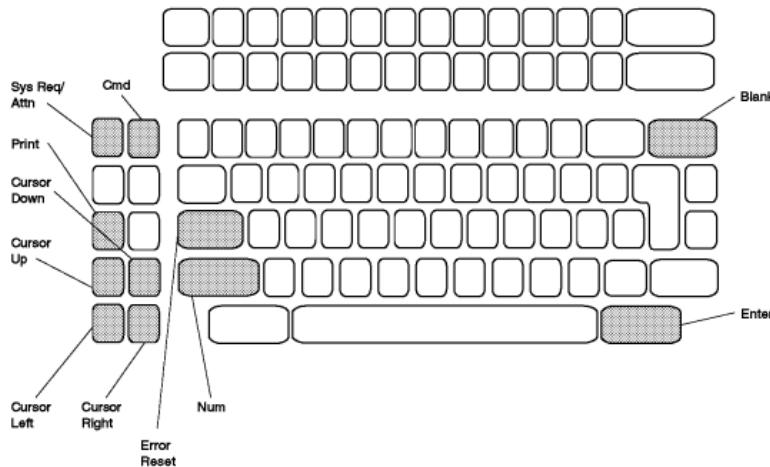


Figure 41. IBM Typewriter Data Entry Keyboard

Subtopics:

- [D.7.1 Test Request Key Sequence](#)
 - [D.7.2 System Request Key Sequence](#)
 - [D.7.3 Local Copy Key Sequence](#)
-

D.7.1 Test Request Key Sequence

1. Press the **Error Reset** key.
 2. Press the **Cmd** key.
 3. Press the **Blank** key.
-

D.7.2 System Request Key Sequence

1. Press the **Error Reset** key.
 2. Press and hold the **Num** key.
 3. Press the **Sys Req/Attn** key.
-

D.7.3 Local Copy Key Sequence

1. Press the **Print** key.

E.0 Appendix E. Tools and Test Equipment

This appendix contains the following:

- Information about tools available from a branch office
- Descriptions of test equipment normally available during field service.

Subtopics:

- [E.1 Special Test Equipment](#)
 - [E.2 Service Aids](#)
-

E.1 Special Test Equipment

You may need the following special tools for testing:

Tool	IBM P/N
EIA interface tester	453637
Workstation Controller Port Tester	59X4262

Subtopics:

- [E.1.1 EIA Interface Tester](#)
 - [E.1.2 Port Tester](#)
-

E.1.1 EIA Interface Tester

You can use this EIA interface tester (IBM P/N 453637) to examine individual signal lines of an EIA 232D interface.

E.1.2 Port Tester

You can use this IBM Workstation Controller Port Tester (IBM P/N 94X2040) to isolate cabling and port problems on the 5494. The port tester is shown in [Figure 42 in topic E.1.2.2](#).

Attach the port tester directly to one of the following:

- A twinaxial 5494 port or cable
- A twisted-pair 5494 port or cable
- The twinaxial adapter on an IBM Cabling System.

The port tester monitors signals from the twinaxial ports on the 5494. Cables being checked must be connected to a 5494 twinaxial port.

DANGER

Do not use the port tester during electrical storms.

Note: For translations of this safety notice, see [Appendix A, "Safety Notices."](#)

Attention: Remove and reconnect cables carefully. You may damage connectors if you use force.

Subtopics:

- [E.1.2.1 Twinaxial Test](#)
- [E.1.2.2 Twisted-Pair Test](#)

E.1.2.1 Twinaxial Test

1. Move the Selector switch to the left (1) position.

2. Attach the appropriate port tester twinaxial connector to the port or cable you are testing, or to a twinaxial adapter attached to the port or cable you are testing.

Note: If the twinaxial plug is needed, remove the twinaxial cable from the twinaxial cable holders located on the side of the port tester.

3. Press and hold the test button for 15 seconds or until one of the following occurs:

- Only the green light comes on. This indicates that the port or cable between the port tester and the control unit is good.
- Only the yellow light comes on. This indicates that the wires in the cable are reversed somewhere between the port tester and the 5494.
- Neither the green nor yellow light comes on. This indicates that there is no signal on the cable between the port tester and the 5494.

This can also indicate that:

- The Selector switch is in the wrong position.
 - The port tester is attached to the wrong port or cable.
 - The attachment to the port or cable is not secure.
-
- Both the green and yellow lights come on. This indicates that either the selector switch is in the self-test position or the port tester is not working correctly.

4. Remove the port tester connector from the cable or port you tested.
 5. If the twinaxial plug was used, put the twinaxial cable back into the twinaxial cable holders.
-

E.1.2.2 Twisted-Pair Test

1. Move the Selector switch to the right (2) position.
2. Attach the appropriate port tester twisted-pair connector to the port or cable you are testing.

Note: If you need the twisted-pair plug, remove it from the twisted-pair cable compartment located at the bottom of the port tester.

3. Push and hold the test button for 15 seconds or until one of the following occurs:
 - o Only the green light comes on. This indicates that the port or cable between the port tester and the 5494 is good.
 - o Only the yellow light comes on. This indicates that the wires in the cable are reversed somewhere between the port tester and the 5494.
 - o Neither the green nor yellow light comes on. This indicates that there is no signal on the cable between the port tester and the 5494.

This can also indicate that:

- The selector switch is in the wrong position.
 - The port tester is attached to the wrong port or cable.
 - The attachment to the port or cable is not secure.
- o Both the green and yellow lights come on. This indicates that either the selector switch is in the self-test position or the port tester is not working correctly.

4. Remove the port tester connector from the cable or port you tested.
5. If you used the twisted-pair plug, put the twisted-pair cable back into the twisted-pair cable compartment.

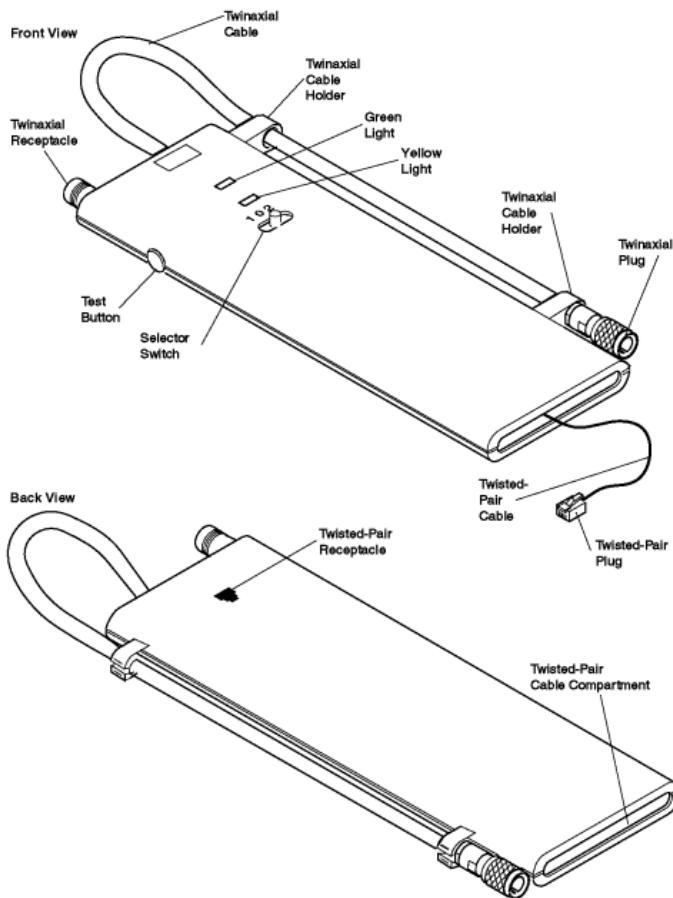


Figure 42. Port Tester

E.2 Service Aids

The 5494 has undergone several design changes to improve reliability and serviceability. Some of these changes affect the application of maintenance procedures.

Subtopics:

- [E.2.1 Communication Cables](#)
- [E.2.2 Twinaxial Ports](#)
- [E.2.3 Cable Signal Quality Check](#)
- [E.2.4 Line Continuity and Polarity Reversal Tests](#)
- [E.2.5 Workstation Twinaxial Interface Check](#)
- [E.2.6 IBM Cabling System Tests](#)
- [E.2.7 IBM Cabling System Data Path Tests](#)

E.2.1 Communication Cables

When the 5494 detects a problem with the communications cables for X.21, V.35, and EIA 232D protocols, it can automatically wrap the transmit and receive signals. There are no switches to set to initiate a wrap. Partial termination for the transmit and receive circuits is located within the cable; the remaining termination is located on the host-twinaxial adapter.

E.2.2 Twinaxial Ports

The 5494 does not detect shorts on the twinaxial cable, but it does report TAC errors when it detects that the driver or receiver circuits have failed. Concurrent mode may be used to view the TAC error count logged for each port. For more information about viewing TAC error counts, see "[Displaying 5494 TAC and Timeout Error Counters](#)" in topic [6.2.5](#).

E.2.3 Cable Signal Quality Check

The purpose of the cable signal quality check is to determine if and where there is a failure in the cable, cable connectors, or an attached workstation. The types of failures can be opens, shorts, poor connections, or impedance mismatches. You must use an oscilloscope to do this check.

Note: The customer installs and maintains the cables. Use the following precautions:

1. Do not use this test to check the quality of work done on the cables by a contractor or a customer.
2. If the cable installation is still under contractor warranty, or if a third party is responsible for the quality of the installation, use extra care so that quality of the product or workmanship of the cable is not degraded.
3. Use this test as a problem determination aid only when instructed to do so by maintenance procedures, after you have followed all maintenance procedures, or if the customer could not determine the problem.
4. Do not use this test for communication facilities owned or supplied by a common carrier, such as telephone lines.

You can also use the test to check cables installed on other products for use on IBM systems.

Subtopics:

- [E.2.3.1 Testing with the Oscilloscope](#)
 - [E.2.3.2 Normal Cable](#)
 - [E.2.3.3 Shorted Cable](#)
 - [E.2.3.4 Open Cable](#)
 - [E.2.3.5 Measuring Distance](#)
 - [E.2.3.6 Oscilloscope Setup and Extra Parts Needed](#)
 - [E.2.3.7 Oscilloscope Settings](#)
 - [E.2.3.8 Adjusting the Oscilloscope for the Correct Display](#)
-

E.2.3.1 Testing with the Oscilloscope

This test transmits a signal down the line using the square wave from the B-gate output on the oscilloscope. You can check cables of any length, in sections of a maximum of 1525 m (5000 ft). This setup, shown in [Figure 43](#), uses the Tektronix** 453 oscilloscope; however, you can use other oscilloscopes with the same oscilloscope setup.

For more information, refer to *Basic Oscilloscope Operation*, SR28-0465.

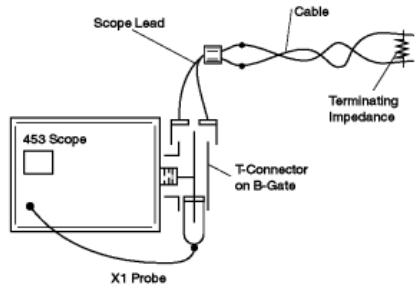


Figure 43. Oscilloscope Setup for Testing Cables

[Figure 44](#) shows an oscilloscope display of a transmitted signal for a normal cable condition and the change to that signal caused by a shorted or open cable.

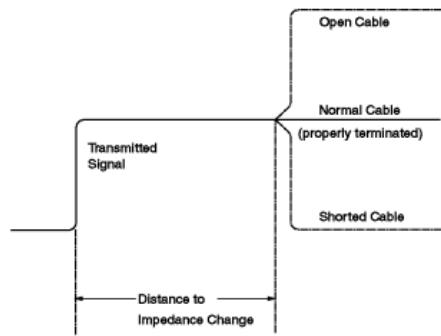


Figure 44. Oscilloscope Trace for Open or Shorted Cable

E.2.3.2 Normal Cable

If the cable is terminated by the correct load impedance (110 Ohms), all the energy of the transmitted signal is absorbed by the terminating impedance.

E.2.3.3 Shorted Cable

If there is a cable failure that changes the impedance of the cable, a part of the signal is reflected back to the signal source. If the cable failure causes the impedance to be lower than normal, the reflected signal is out of phase and causes a reduction of the signal.

E.2.3.4 Open Cable

If the failure causes the impedance of the cable to be greater than normal, the reflected signal is in phase and causes an increase in the amplitude of the signal.

E.2.3.5 Measuring Distance

The reflected energy is delayed by the time (t) it takes for the transmitted signal to travel to and from the termination or the fault.

By measuring the time from the start of the B-gate pulse to the start of the change caused by the reflected signal, you can determine the distance to the cable fault or cable end.

After you determine the fault, you can determine the distance from the cable end to the fault by using the following formulas:

For twinaxial (solid poly) cable:

$$\begin{aligned} D_f &= t (\mu s) \times 324.7 \text{ ft}/\mu s \\ D_m &= t (\mu s) \times 99 \text{ m}/\mu s \end{aligned}$$

For twinaxial (Teflon**) cable:

$$\begin{aligned} D_f &= t (\mu s) \times 344.5 \text{ ft}/\mu s \\ D_m &= t (\mu s) \times 105.0 \text{ m}/\mu s \end{aligned}$$

For IBM Cabling System cable:

$$\begin{aligned} D_f &= t (\mu s) \times 366.7 \text{ ft}/\mu s \\ D_m &= t (\mu s) \times 111.8 \text{ m}/\mu s \end{aligned}$$

where:

- D_f is the distance to the fault in feet.
- D_m is the distance to the fault in meters.
- μs is microseconds.
- t is the time in microseconds from the start of the B-gate pulse to the start of the reflected signal. To find t, multiply the number of scope divisions by the B-sweep time/div.

Note: Pulse rise time increases on long cables. Measure from the point where the reflected pulse just starts to change, as indicated by the arrows in [Figure 45](#).

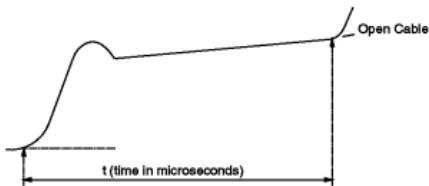


Figure 45. Pulse Rise Time

An Example of Measuring Distance: The example in [Figure 46](#) is for a solid poly cable, using the preceding formula for measuring distance, with the B time/div set to 0.2 microseconds and the number of oscilloscope divisions at 6.

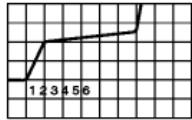


Figure 46. Measuring Distance Using an Oscilloscope

$$\begin{aligned} t &= 6 \text{ divisions} \times 0.2 \mu\text{s} = 1.2 \mu\text{s} \\ D_f &= 1.2 \mu\text{s} \times 324.7 \text{ ft} = 390 \text{ ft} \\ D_m &= 1.2 \mu\text{s} \times 99 \text{ m} = 119 \text{ m} \end{aligned}$$

The fault is indicated by the direction of the signal change (up for an open, down for a short).

Note: If the station protectors are installed, the B-gate pulse may cause the diodes to fire and generate a glitch on the displayed waveform.

E.2.3.6 Oscilloscope Setup and Extra Parts Needed

Use an X1 probe (you can use X10 probes by changing the vertical input setting) and the following extra parts:

- One coaxial cable with a BNC end and alligator clips (IBM P/N 1650790); or a BNC-to-banana plug adapter and multimeter leads
- One resistor equal to the impedance of the cable (110- Ohms resistor); or resistor assembly (IBM P/N 7362344)

- One BNC T-connector (IBM P/N 1650789)
- One probe tip-to-BNC adapter (IBM P/N 453199).

Use [Figure 48](#) and do the following steps in order:

1. Connect the T-connector to the B-gate on the side panel of the oscilloscope.
2. Use the probe tip adapter to connect the channel 1 probe to one side of the T-connector.
3. Connect the cable to be tested on the other side of the T-connector. If needed, use the coaxial cable with alligator clips or the BNC-to-banana plug adapter with CE meter leads. Connect the two alligator clips to the two leads of the cable to check the phase B and A lines of the cable, or to one phase line and the cable shield to check the shield continuity.
4. You can connect the other end of the cable to be tested to the workstation if the cable is terminated.
5. When checking shield continuity, you should connect the remote end of the cable to a workstation, or you should terminate it as shown in [Figure 47](#).

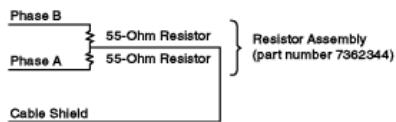


Figure 47. Terminating a Cable

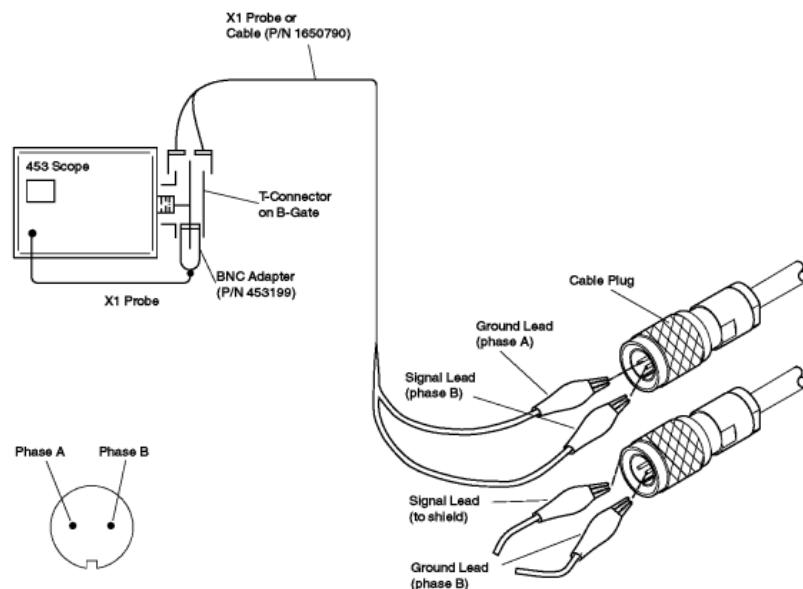


Figure 48. Oscilloscope Setup

E.2.3.7 Oscilloscope Settings

Set the oscilloscope as follows:

- Mode to Channel 1
- Trigger to Channel 1 Only
- Volt/Div to 0.2 V (initial setting)
- Input to ac.

Set A triggering as follows:

- Level to full counterclockwise
- A-Sweep Length to Full
- Horiz Display to Delayed Sweep (B)
- B-Sweep Mode to B Starts after Delay Time
- A-Sweep Mode to Auto Trig
- Delay-Time Multiplier dial fully clockwise (9.5).

Set A- and B-time/division as follows:

- A to 10 microseconds
- Pull to unlock
- B to 0.1 microseconds.

Then, adjust as follows:

- Adjust the A triggering level for a stable display.
 - Adjust the Delay Time to set the rise time of the B-gate pulse (left edge) at the left side of the oscilloscope.
-

E.2.3.8 Adjusting the Oscilloscope for the Correct Display

If no reflection is displayed (as shown in [Figure 49](#)), you may be looking at the first good part of a long cable with the fault; that is, a cable longer than 100 m (328 ft).

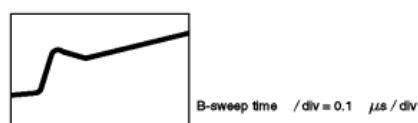


Figure 49. No Reflection

If multiple reflections are displayed (as shown in [Figure 50](#)), the fault is less than 50 m (164 ft) from your end of the cable, or the B-time base is not set correctly.



Figure 50. Multiple Reflections

Increase the B-time/div from 0.1 to 0.2 or higher until a reflection displays; or, decrease the B-time/div to 0.05 so only a single reflection displays (as shown in [Figure 51](#)).



Figure 51. Single Reflection

When the reflection is displayed, you must short the opposite end of the cable. If the displayed reflection changes by 180 degrees, you are seeing the other end of the cable. If the displayed signal does not change when the opposite end is shorted, the signal reflection is caused by a fault in the cable.

Consider the following when you perform the tests:

- To determine the length of the cable, it is recommended that you start with the remote end of the cable open (unplugged).
- You can use 110 Ohms resistor or a resistor assembly (IBM P/N 7362344) to terminate the line, or you can terminate the line by plugging the cable into a workstation and setting the workstation terminator switch to 1.
- You can connect short cable segments up to a maximum length of 1524 m (5000 ft).
- Look for a bad reflection. The B setting of 0.1 msec displays cables of up to 100 m (328 ft) or the first part of longer cables. To display longer cables of up to 1524 m (5000 ft), use the B setting of up to 2 msec.
 - The 0.1-msec setting equals 9.9 m (32.47 ft)/div for a solid poly cable.
 - The 2-msec setting equals 198 m (649.4 ft)/div for a solid poly cable.
- To magnify small changes, adjust the Channel 1 position knob and Channel 1 volts/div to a lower setting.

- Major faults at long distances can cause reflections no larger than smaller faults close to the test end of the cable.
- After finding mismatches, you can measure close to the fault to describe it more accurately.
- Faults too close to the tested end of the cable, within 6 m (20 ft), cause reflections to occur within the rise time of the oscilloscope. Test from both ends of the cable if no clear reflection of the fault is displayed.

Note: The 6-m (20-ft) measurement is approximate and depends on the oscilloscope that you use.

Oscilloscope Display Examples: See [Figure 52](#) through [Figure 58](#).

[Figure 52](#) shows a good cable that is 155.5 m (510 ft) long. A gradual upward slope of the displayed signal is normal after the first division and appears as a higher upward slope as the B-sweep time increases.

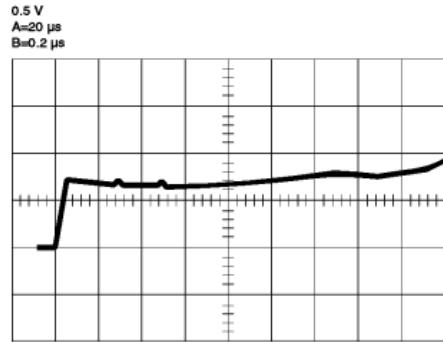


Figure 52. Normal Cable (Properly Terminated)

[Figure 53](#) shows a cable that is shorted at the end to show downward reflection and length.

Length of sweep = 7.8 div
 B setting = 0.2 μs/div
 $7.8 \times 0.2 = 1.56 \mu s$
 $1.56 \times 99 = 154 \text{ m or}$
 $1.56 \times 324.7 = 507 \text{ ft}$

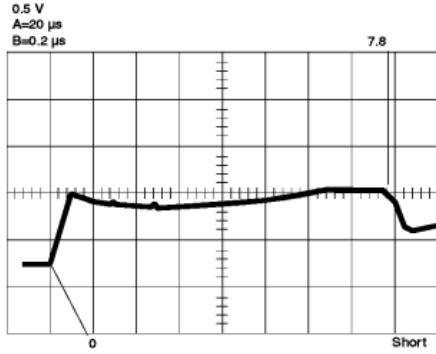


Figure 53. Shorted Cable

[Figure 54](#) is the same as [Figure 53](#) but with a higher vertical gain (0.2V/div).

The 0 points to start. Notice the two wrinkles 1.3 and 2.5 divisions from the start. They represent very small mismatches at the workstation connectors. These mismatches are at a distance of 26 m (85 ft) and 50 m (164 ft) from the start.

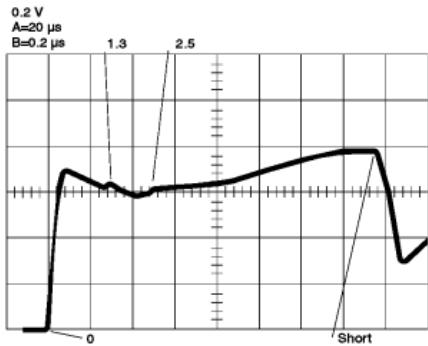


Figure 54. Shorted Cable (Higher Vertical Gain)

[Figure 55](#) is the same as [Figure 53](#) but with an open end. This is an effective way to measure the length of a cable.

The bumps at 1.3 and 2.5 indicate workstation connectors. The large bump at 2.5 indicates a larger mismatch (poor connection) than at 1.3.

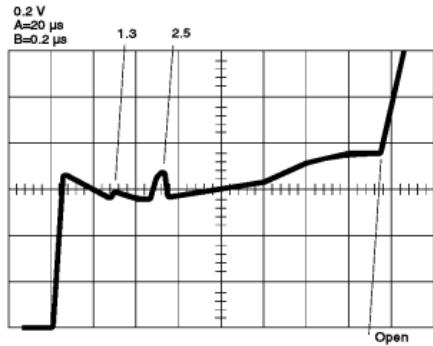


Figure 55. Open Cable

[Figure 56](#) is not a correct display of cable reflections. The multiple reflections are at 26 m (85 ft) of a good cable with an open end. This display is caused by the wrong vertical gain setting (0.5 V/div) and the wrong B-time/div. Only the first reflection in this figure is important and should be magnified by changing the vertical gain to 0.2 V/div and B-time to 0.05 μ s/div.

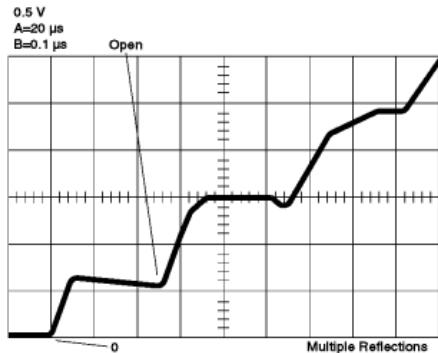


Figure 56. Open Cable (Wrong Oscilloscope Setting)

[Figure 57](#) shows a 155-m (510 ft) cable with one wire shorted to shield at approximately 78 m (255 ft). The end is left open. This scope figure is valid for the twinaxial cable only.

Notice the steep slope changes that occur at the point indicated by the short.

A reflection of more than 10% of the transmitted signal, if measured within 100 m (328 ft) of the fault, usually indicates an undesirable impedance change.

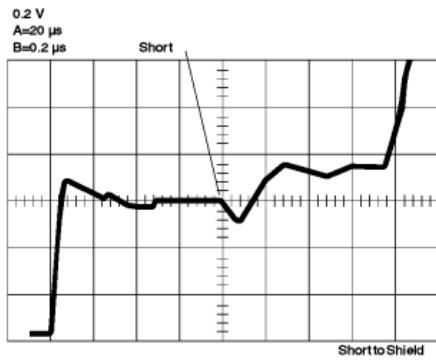


Figure 57. Short to Shield

[Figure 58](#) shows the same condition as in [Figure 57](#) but with the alligator clips interchanged. In this figure, the same short is easier to identify because of the incident wave signal being referenced to ground.

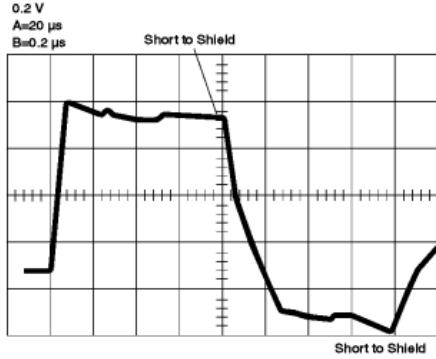


Figure 58. Short to Shield (Oscilloscope Leads Swapped)

E.2.4 Line Continuity and Polarity Reversal Tests

You can use the following guide for testing line continuity and polarity reversals. The checks are for single line segments; however, you could use them for a complete line if the station junctions are connected by a line adapter or an IBM 5250 unit that has cable-through (if the power is off).

Subtopics:

- [E.2.4.1 Line Continuity](#)
- [E.2.4.2 Line Polarity](#)

E.2.4.1 Line Continuity

The only tools you need for line continuity checks are an ohmmeter and jumpers to connect between the connector pins (signal lines) and the connector body (cable shield). When you make the following checks, all resistances should be less than the indicated values. These values apply to a 1524-m (5000-ft) cable. Corresponding values for shorter cables are proportionally smaller.

With both ends of the cable open and the cable not plugged into a machine, measure (at either end):

- Line to line, higher than 100 000 Ohms
- Each line to shield, higher than 100 000 Ohms

With both lines tied to the shield at the far end, measure (at nearest end):

- Line to line, less than 110 Ohms
- Each line to shield, less than 70 Ohms

E.2.4.2 Line Polarity

After testing the line continuity and making any necessary corrections, check the polarity as follows using [Figure 59](#).

With one of the pins tied to the shield at the far end, measure the pin at the nearest end. The resistance should be less than 70 Ohms (if over 70 Ohms, lines are crossed).

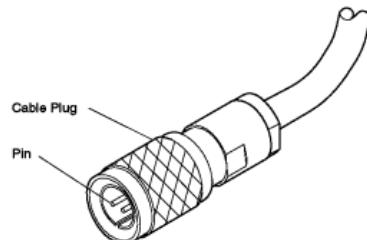


Figure 59. Twinaxial Cable Plug

E.2.5 Workstation Twinaxial Interface Check

Do the following to check the twinaxial interface at the workstation:

1. Turn the workstation power **OFF (0)**.
2. For workstations with only one twinaxial socket and no T-connector (without cable-through), remove the twinaxial cable and go to step [9](#).
3. For workstations with two twinaxial sockets (with cable-through), continue with step [4](#).
4. Remove any connector from both workstation twinaxial sockets.

5. Set the terminator switch (if present) to position 2 (not terminated). If you make this check on a 3180 display station, push in and hold the center pin on socket 2 while you make the check.

6. Check for the following resistances at **socket 1** using [Figure 60](#) and [Table 58](#), setting the ohmmeter to a range of 1 or higher.

Table 58. Conductor-to-Conductor Check with Switch in Position 2			
Positive		Negative	
Phase A	to	phase B	> 50 kOhms
Phase B	to	phase A	> 50 kOhms
Phase A	to	shield	> 2000 Ohms
Phase B	to	shield	> 2000 Ohms
Shield	to	phase A	> 50 kOhms
Shield	to	phase B	> 50k Ohms

7. Check for the following resistances using [Figure 60](#) and [Table 59](#), setting the ohmmeter to the X1 scale.

Table 59. Socket-to-Socket Check with Switch in Position 2			
Socket 1		Socket 2	
Phase A	to	phase A	< 1 Ohm
Phase B	to	phase B	< 1 Ohm

8. Set the terminator switch (if present) to position 1 (terminated position). If you make the check on an IBM 3180 display station, the terminator is automatically on when you remove the cable from socket 2.

9. Check for the following resistances at **socket 1** using [Figure 60](#) and [Table 60](#), setting the ohmmeter to the X10 scale.

Table 60. Conductor-to-Conductor Check with Switch in Position 1			
Positive		Negative	
Phase A	to	phase B	100 to 200 Ohms
Phase B	to	phase A	100 to 200 Ohms
Phase A	to	shield	50 to 60 Ohms
Phase B	to	shield	50 to 60 Ohms
Shield	to	phase A	50 to 60 Ohms
Shield	to	phase B	50 to 60 Ohms

10. Omit this step for workstations that do not have cable-through. Otherwise, check the following resistances using [Figure 60](#) and [Table 61](#), setting the ohmmeter so that the resistance equals 1000 ohms or greater.

Table 61. Socket-to-Socket Check with Switch in Position 1			
Socket 1		Socket 2	
Phase A	to	phase A	> 100 kOhms
Phase B	to	phase B	> 100 kOhms

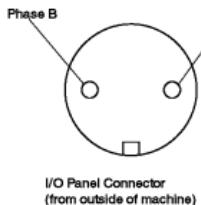


Figure 60. I/O Panel Connector

E.2.6 IBM Cabling System Tests

This section contains tests for accessories used with the IBM Cabling System. The tests are:

- Impedance matching device or direct-connect cable check
- Twinaxial Y test
- Twinaxial terminator assembly test.

Subtopics:

- [E.2.6.1 Impedance Matching Device or Direct-Connect Cable Check](#)
 - [E.2.6.2 Twinaxial Y Test](#)
 - [E.2.6.3 Twinaxial Terminator Assembly Test](#)
-

E.2.6.1 Impedance Matching Device or Direct-Connect Cable Check

[Figure 61](#) shows an impedance matching device (IBM P/N 6091070).

Note: The resistor assembly is not present for direct-connect cables.

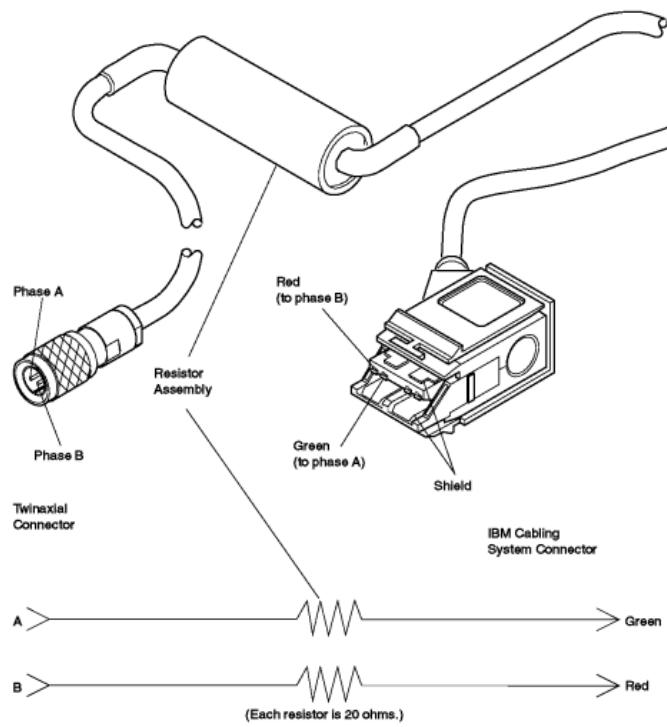


Figure 61. Impedance Matching Device

Use the following procedure to test the IMD or direct-connect cable:

1. Install a test connector (see [Figure 62](#)) on the IBM Cabling System connector of the impedance matching device or direct connect cable.

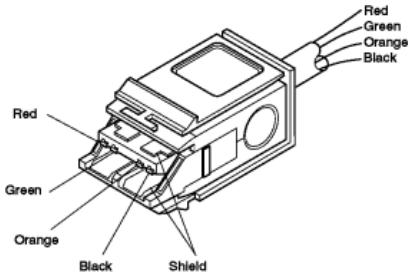


Figure 62. Test Connector

2. Check for resistances in [Table 62](#).

Table 62. IMD or Direct-Connect Cable Check

Measure Resistance From	Resistance Measurement	
	Impedance Matching Device	Direct Connect Cable
Phase A to green	18 to 22 Ohms	< 1 Ohm
Phase B to red	18 to 22 Ohms	< 1 Ohm
Phase A to B	> 100 kOhms	> 100 kOhms
Phase A to shield	> 100k Ohms	> 100 kOhms
Phase B to shield	> 100 kOhms	> 100 kOhms
Twinaxial shield to cabling system shield	< 1 Ohm	< 1 Ohm

E.2.6.2 Twinaxial Y Test

A twinaxial Y (P/N 8642550) is shown in [Figure 63](#).

Note: All cabling system connectors are equipped with shorting bars that function as the switches in the schematic. The contacts are open when the connector is plugged in.

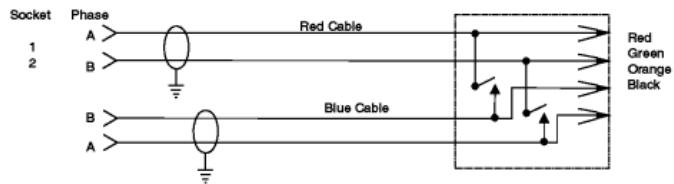
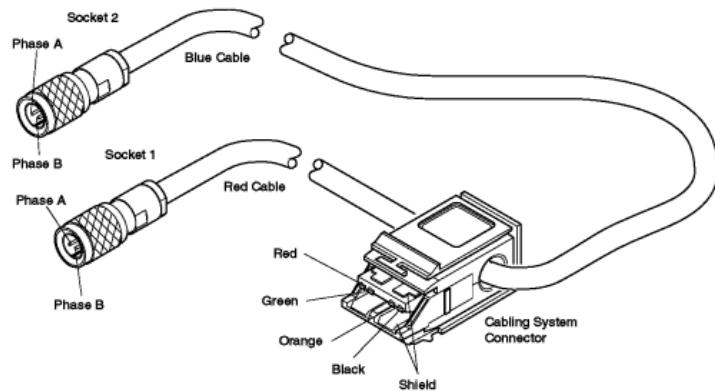


Figure 63. Twinaxial Y

Use the following procedure to test the twinaxial Y:

1. Install a test connector on the IBM Cabling System connector of the Y as shown in [Figure 63](#).
2. Check for the resistances in [Table 63](#).

Table 63. Twinaxial Y Test

Measure Resistance From	Resistance Measurement
Phase A of red cable to green test lead	< 1 Ohm
Phase B of red cable to red test lead	< 1 Ohm
Phase A of blue cable to black test lead	< 1 Ohm
Phase B of blue cable to orange test lead	< 1 Ohm
Twinaxial shield to cabling system shield	< 1 Ohm
Phase A of red cable to phase B of red cable	> 100 kOhms
Phase A of blue cable to phase B of blue cable	> 100 kOhms
Each phase lead to shield	> 100 kOhms

E.2.6.3 Twinaxial Terminator Assembly Test

A twinaxial terminator assembly (IBM P/N 6091068) is shown in [Figure 64](#).

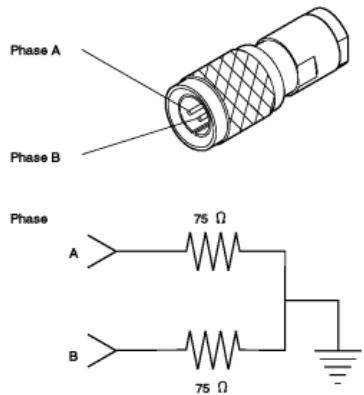


Figure 64. Twinaxial Terminator Assembly

To test the twinaxial terminator assembly check for the resistances in [Table 64](#).

Table 64. Twinaxial Terminator Assembly Test

Measure Resistance From	Resistance Measurement
Phase A to phase B	150 Ohms ± 10%
Phase A to shield	75 Ohms ± 10%
Phase B to shield	75 Ohms ± 10%

E.2.7 IBM Cabling System Data Path Tests

This section contains the test procedures for the IBM Cabling System data paths and includes the following tests:

- Test for cable drop from distribution panel to control unit
- Test for cable drop from distribution panel to workstations except the last workstation on the data path
- Test for cable drop to last workstation on the data path
- Test for cable drop between distribution panels.

A typical IBM Cabling System data path is shown in [Figure 65](#). A test connector like the one shown in [Figure 62 in topic E.2.6.1](#) is needed for these tests.

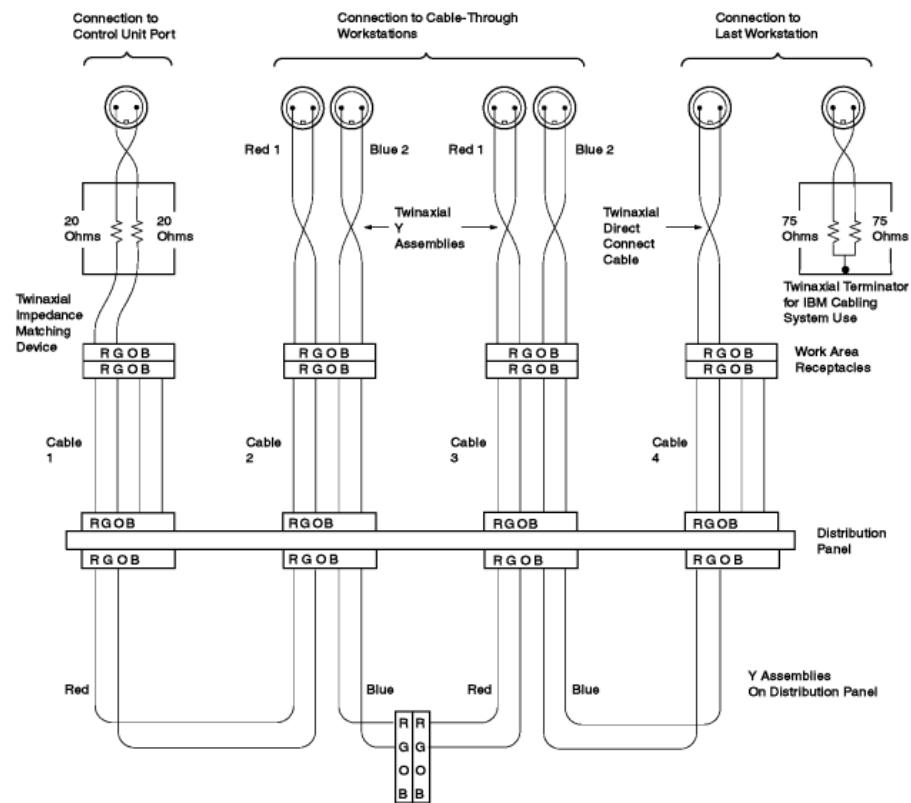


Figure 65. Schematic of a Simple IBM Cabling System Installation Using Twinaxial Accessories

Subtopics:

- [E.2.7.1 Test for Cable Drop from Distribution Panel to Control Unit](#)
- [E.2.7.2 Test for Cable Drop from Distribution Panel to Workstations Except the Last Workstation on the Data Path](#)
- [E.2.7.3 Test for Cable Drop to Last Workstation on the Data Path](#)
- [E.2.7.4 Test for Cable Drop between Distribution Panels](#)

E.2.7.1 Test for Cable Drop from Distribution Panel to Control Unit

Attention: To prevent destroying any active jobs, make sure that you do not unplug the connectors for any data path other than the one being checked.

Use the following procedure to test the cable drop from the distribution panel to the control unit.

1. Make sure that you disconnect the control unit from the cabling system at the cabling system wall connector.

2. Go to the distribution panel and do the following steps using [Figure 66](#):

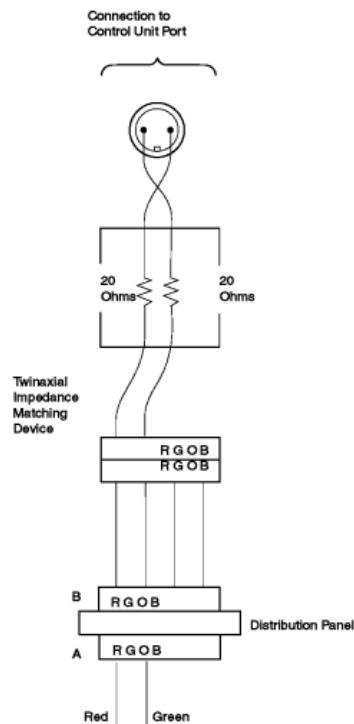


Figure 66. Testing Cable Drop from the Distribution Panel to the Control Unit

a. Make sure that all connectors are correctly labeled so that you can restore the original configuration.

b. Disconnect the red cable of the Y (or the jumper cable) A that connects to the cable drop B going to the control unit.

c. Install a test connector on the cable drop going to the control unit at **B**.

d. Check for the resistances in [Table 65](#).

Note: For a continuity test only, use only the first two connections shown in [Table 65](#).

Table 65. Distribution Panel to Control Unit		
Connect Meter Leads As Shown Below		Normal Resistance
Positive	Negative	
Red	Orange	0 to 14 Ohms(1)
Green	Black	0 to 14 Ohms(1)
Red	Green	> 5000 Ohms
Green	Red	> 5000 Ohms
Shield	Red	> 5000 Ohms
Shield	Green	> 5000 Ohms

1. If surge suppressors are installed on the line, the normal resistance is 36 to 54 Ohms.

E.2.7.2 Test for Cable Drop from Distribution Panel to Workstations Except the Last Workstation on the Data Path

Use the following procedure to test the cable drop from the distribution panel to the workstation:

1. Install a test connector on the red cable of the Y that is connected to the cable drop to be tested.
2. Install a test connector on the blue cable of the Y that is connected to the cable drop to be tested.

Note: The test connectors are not required for this test but are recommended for ease of connection.

3. Check for the resistances in [Table 66](#).

Note: For a continuity test only, use only the first two connections shown in [Table 66](#).

Table 66. Distribution Panel to Work Stations Except Last Workstation		
Connect Meter Leads As Shown Below		Normal Resistance
Positive at Red Cable	Negative at Blue Cable	
Red	Red	0 to 14 Ohms(1)
Green	Green	0 to 14 Ohms(1)
Red	Green	> 5000 Ohms
Green	Red	> 5000 Ohms
Shield	Red	> 5000 Ohms
Shield	Green	> 5000 Ohms

1. If surge suppressors are installed on the line, the normal resistance is 36 to 54 Ohms.

E.2.7.3 Test for Cable Drop to Last Workstation on the Data Path

Use the following procedure to test the cable drop to the last workstation of the data path:

1. Install the test connector on the cable drop to the last workstation.

2. Check for the resistances in [Table 67](#).

Table 67. Last Workstation		
Connect Meter Leads As Shown Below		Normal Resistance
Positive	Negative	
Red Shield Shield	Green Red Green	140 to 180 Ohms(1) 65 to 95 Ohms(1) 65 to 95 Ohms(1)
1. If surge suppressors are installed on the line, the normal resistance is 175 to 225 Ohms for red to green and 90 to 110 Ohms for red or green to shield.		

3. If only the last workstation is failing, do the following steps:

a. Disconnect the last workstation from the cabling system at the cabling system wall connector.

b. Check for the resistances in [Table 68](#).

Table 68. Last Workstation Failing		
Connect Meter Leads As Shown Below		Normal Resistance
Positive	Negative	
Red Green Red Green Shield Shield	Orange Black Green Red Red Green	0 to 14 Ohms(1) 0 to 14 Ohms(1) > 5000 Ohms > 5000 Ohms > 5000 Ohms > 5000 Ohms
1. If surge suppressors are installed on the line, the normal resistance is 36 to 54 Ohms.		

E.2.7.4 Test for Cable Drop between Distribution Panels

Use the following procedure to test the cable drop between the distribution panels:

1. Disconnect the Y (or jumper cable) that is connected to the cable drop between panels at the distribution panel that is nearest to the control unit.

2. Go to the distribution panel at the other end of the cable drop and disconnect any Y (or jumper cable) connected at that end.

3. Install a test connector on the cable drop between panels at the distribution panel most distant from the control unit.

4. Check for the resistances shown in [Table 69](#).

Note: For a continuity test only, use only the first two connections shown in [Table 69](#).

Table 69. Between Workstations		
Connect Meter Leads As Shown Below		Normal Resistance
Positive	Negative	
Red	Orange	0 to 135 Ohms(1)
Green	Black	0 to 135 Ohms(1)
Red	Green	> 5000 Ohms
Green	Red	> 5000 Ohms
Shield	Red	> 5000 Ohms
Shield	Green	> 5000 Ohms

1. Resistance for surge suppressors has been included. Without surge suppressors, the normal resistance is 0 to 105 Ohms.

ABBREVIATIONS List of Abbreviations

A

A. (1) Ampere. (2) Attention.

ac. Alternating current.

ACTLU. Activate Logical Unit.

ACTPU. Activate Physical Unit.

AID. Attention identifier.

ALS. Adjacent link station.

Alt. Alternate.

ANSI. American National Standards Institute.

APPC. Advanced program-to-program communication.

ARE. All Routes Explorer.

ASCII. American National Standard Code for Information Interchange.

ATTN. Attention.

B

B. Busy.

BB. Begin bracket.

BIU. Basic information unit.

BNC. Bayonet connector.

BPDU. Bridge Path Data Unit

bps. Bits per second.

BSC. Binary synchronous communication.

Btu. British thermal unit.

BTU. Basic transmission unit.

C

C. Celsius.

C&D. Cause and diagnostic (codes).

CC. Control check, Chain Command (flag).

CCITT. International Telegraph and Telephone Consultative Committee.

CD. Carrier detect.

CDSTL. Connect data set to line.

CE. (1) IBM Customer Engineer. (2) Correctable error. (3) Channel-end.

char. Character.

CI. Calling indicator.

CNM. Communication network management.

CNOS. Change number of sessions

comm. Communication.

CP. Control point.

cps. Characters per second.

CRC. Cyclic redundancy check.

CRT. Cathode ray tube.

CSMA/CD. Carrier sense multiple access with collision detection.

CSU. Customer setup.

CTS. Clear-to-send.

D

D. Display.

dB. Decibel.

DB. (1) Data base. (2) Device Busy.

dBm. Decibels based on one milliwatt.

dc. Direct current.

DC. Data communication.

DCC. Disconnect command chaining.

DCD. Data carrier detect.

DCE. Data circuit-terminating equipment.

DE. Device-end.

DES. Data Encryption Standard.

DISC. Disconnect.

DLC. Data link control.

DLCI. Data link connection identifier.

DM. (1) Disconnect mode. (2) Distribution Manager.

DNIC. Data network identification code.

DOS. Disk Operating System.

DR. Definite response.

DRAM. Dynamic random access memory.

DSR. Data set ready.

DSU. Data service unit.

DTE. Data terminal equipment.

DTR. Data terminal ready.

dup, DUP. Duplicate.

DWS. Dependent workstation. See *NWS*.

EB. End bracket.

EBCDIC. Extended binary-coded decimal interchange code.

EC. Engineering change.

ECC. Error-checking and correction.

EIA. Electronics Industries Association.

ELLC. Enhanced logical link control.

ERAP. Error recording analysis procedure/program.

ERI. Exception response indicator.

ERP. Error recovery procedures.

Esc. Escape.

ESD. Electrostatic discharge.

F

F. Fahrenheit.

FBI. File bus in.

FCC. Federal Communications Commission.

FCI. Functional configuration identification.

FCS. Frame checking sequence.

FF. Form Feed.

FID. Format identifier.

FM. (1) Frequency modulation. (2) Function management. (3) Field mark.

FMD. (1) Function management data. (2) Field macro diagram.

FMH. Function management header.

FRMR. Frame reject response.

| **FR-TR.** Frame Relay Token-Ring

FRU. Field replaceable unit.

ft. Foot (or feet).

G

GFI. General format identifier.

GND. Ground.

H

H. Height.

HDLC. High-level data link control.

hex. Hexadecimal.

Hz. Hertz.

I

I. Information (format).

ID. Identification, identifier.

in. Inch (or inches).

I/O. Input/output.

| **IP.** Internet Protocol

IPDS. Intelligent Printer Data Stream.

IPDU. Inter-network protocol data unit.

IPL. Initial program load.

| **IPX.** Internetwork Packet Exchange

ISO. International Organization for Standardization.

IWS. Independent workstation. See *PWS*.

K

k. 1000.

K. When referring to storage capacity, 1024.

KTT. Keyboard Translate Table.

L

L. Left.

LAN. Local Area Network

LCD. Liquid crystal display.

LAPB. Link access protocol balanced.

LCID. Logical channel identifier.

LED. Light-emitting diode.

LFSID. Local Form Session Identifier

LLC. Logical link control.

LMI. Link management interface.

LPDA. Link Problem Determination Aid.

LRC. Longitudinal redundancy check.

LSID. Local session identification.

LU. Logical unit.

M

m. Meter (or meters).

MAC. (1) Medium access control. (2) Message authentication code.

MAP. Maintenance analysis procedure.

MB. Megabyte; 1 048 576 bytes.

Mbps. Megabits per second.

MDT. Modified data tag.

MHz. Megahertz.

min. Minimum, minute.

mm. Millimeter (or millimeters).

modem. Modulator-demodulator.

MPU. Microprocessor unit.

μs. Microsecond.

MSAU. Multistation access unit.

MSR. Magnetic stripe reader.

mv. Millivolt.

N

NAU. Network addressable unit.

NDM. Normal disconnect mode.

NetBIOS. Network Basic Input/Output System.

No. Number.

NRM. Normal response mode.

NRZ. Non-return to zero.

NRZI. Non-return to zero (inverted).

NS. Nonsequenced (format).

NUI. Network user identifier.

NUM. Numeric.

NVRAM. Non-volatile random access memory.

NWS. Nonprogrammable workstation.

O

&Omega.. Ohms.

ODAI. Origin-Destination Assignor Identifier

OS/2. Operating System/2.

OS/2 EE. Operating System/2 Extended Edition.

P

P. Printer, protected.

PA. (1) Program access. (2) Program attention.

PC. Personal computer.

PDT. Printer Definition Table.

pF. Picofarad.

PF. Program function.

PI. Pacing indicator.

PIU. Path information unit.

POST. Power-on self-test.

PS. Programmed symbols.

PSDN. Packet switching data network.

PSH. Physical services header.

PSN. Public switched network.

PTT. Post Telephone and Telegraph Administration

PU. Physical unit.

PVC. Permanent virtual circuit.

PWS. Programmable workstation.

Q

QLLC. Qualified logical link control.

QRI. Queued response indicator.

R

R. Rear, row.

RAM. Random access memory.

RC. Return code.

RD. Receive data.

RECFMS. Record Formatted Maintenance Statistics.

Req. Request.

REQMS. Request Maintenance Statistics.

RFS. Ready for sending.

RH. Request header (or response header).

RI. Ring Indicate.

RLSD. Receive Line Signal Detect.

rms. Root-mean-square.

RNR. Request not ready, receive not ready.

ROM. Read-only memory.

ROS. Read-only storage.

RPOA. Recognized private operating agency.

RPQ. Request for price quotation.

RR. Request ready, receive ready.

RSET. Received signal element timing.

RSP. Response.

rt. Right.

RTS. Request to send.

RU. Request/response unit.

RWS. Remote workstation.

S

S. Sequenced (format), side.

SA. Selection addressing.

SABM. Set Asynchronous Balance Mode (command).

SAP. Service access point.

SC. Status code.

SCS. SNA character string.

SDLC. Synchronous Data Link Control.

Set. Signal element timing.

SHM. Short hold mode.

SI. Suppress Index.

SIMM. Single in-line memory module.

SNA. Systems Network Architecture.

SNBU. Switched network backup.

SNRM. Set Normal Response Mode.

SRC. System reference code.

| **SRF.** Specifically Routed Frames

SS. Surge suppressor.

SSCP. System services control point.

SST. System service tools.

| **STE.** Spanning Tree Explorer

SVC. Switched virtual circuit.

SYN. Synchronous idle.

T

TAC. Transmit activity check.

TC. Transmission control.

TCB. Task control block.

TD. Transmit data.

TDA. Test design automation.

TDB. Test data base.

TDLC. Twinaxial data link control.

TH. Transmission header.

TS. Transmission services.

TSET. (1) Transmitted signal element timing. (2) Terminal set.

U

U. Unprotected.

UA. Unnumbered acknowledgment.

UC. Unit check.

U.S. United States.

US. Unit separator.

V

V. Volt.

V dc. Volts direct current.

VPD. Vital product data.

W

WE. Western Electric.

X

XID. Exchange station identification.

GLOSSARY Glossary

A

access procedure. The procedure or protocol used to gain access to a shared resource. In a LAN, a shared resource is the medium. Some medium access procedures specified by the IEEE 802 standards are carrier sense multiple access with collision detection (CSMA/CD), token bus, and token ring.

access unit. A unit that allows multiple attaching devices access to a token-ring network at a central point such as a wiring closet or in an open work area.

acknowledgment. The transmission, by a receiver, of acknowledge characters as an affirmative response to a sender.

active. Able to communicate on the network. An adapter is active if it is able to pass tokens on the network.

adapter. (1) A general term for a device that provides some transitional function between two or more devices. (2) In a local area network, within a communicating device, a circuit card with its associated software that enables the device to communicate over the network.

address. (1) A value that identifies a register, a particular part of storage, a data source, or a data sink. The value is represented by one or more characters. (2) In data communication, the unique code assigned to each device or workstation connected to a network.

adjacent link station. A link station that directly connects to a given node by a link connection over which network traffic can be carried. For 5494, when the link connection does not pass through an SNA Subarea Network, the AS/400 system is the adjacent link station.

advanced peer-to-peer networking (APPN). (1) An extension to SNA featuring (a) greater distributed network control that avoids critical hierarchical dependencies, thereby isolating the effects of single points of failure; (b) dynamic exchange of network topology information to foster ease of connection, reconfiguration, and adaptive route selection; (c) dynamic definition of network resources; and (d) automated resource registration and directory lookup. APPN extends the LU 6.2 peer orientation for end-user services to network control and supports multiple LU types, including LU 2, LU 3, and LU 6.2.

alert. (1) For IBM LAN management products, a notification indicating a possible security violation, a persistent error condition, or an interruption or potential interruption in the flow of data around the network. (2) In SNA, a record sent to a system problem management focal point to communicate the existence of an alert condition.

| **All Routes Explorer (ARE).** In LANs, a frame that is generated by a source host and transverses the entire source routing part of a LAN, gathering information on the possible paths available.

| **All Routes Explorer filter.** A set of criteria which determine whether or
| not a frame crosses a bridge.

alternate host. For the 5494, an alternate host is an AS/400 system that is not the primary host.

American National Standard Code for Information Interchange (ASCII). A standard code, using a coded character set consisting of 7-bit coded characters (8 bits including parity check), used for information interchange among data processing systems, data communication systems, and associated equipment. The ASCII set consists of control characters and graphic characters.

amplitude. The size or magnitude of a voltage or current waveform.

analog. Pertaining to data consisting of continuously variable physical quantities. Contrast with *digital*.

analog transmission. A signal transmission that is continuously variable in amplitude, frequency, phase, or some combination of all three. (Data characters in a terminal are coded in a dc square wave voltage or in specially identified pulses or signal levels, and are referred to as digital signals. Voice or voice-compatible signals are usually ac voltages that are not easily identified and are known as analog signals.)

application. The use to which an information processing system is put, for example, a payroll application, an airline reservation application, or a network application.

application program. (1) A program written for or by a user that applies to the user's work. Some application programs receive support and services from a special kind of application program called a network application program. (2) A program used to connect and communicate with stations in a network, enabling users to perform application-oriented activities.

architecture. The description of the logical structure, formats, protocols, and operational sequence for transmitting information through, and controlling the configuration and operation of, a network.

asynchronous. (1) Without regular time relationship; unexpected or unpredictable with respect to the execution of program instructions. (2) In asynchronous data transmissions, data characters can be sent or received at any time; no modem clocking is used to establish bit timing.

attach. To connect a device logically to an adapter, so that it can communicate over the network.

attaching device. Any device that is physically connected to a network and can communicate over the network.

attachment unit interface (AUI). In a local area network, the interface between the medium attachment unit and the data terminal equipment within a data station.

attention (ATTN). An occurrence external to an operation that could cause an interruption of the operation.

attention identifier (AID). (1) A code in the inbound 3270 data stream that identifies the source or type of data that follows. (2) A character in a data stream indicating that the user has pressed a key, such as Enter, that requests an action by the system.

attenuation. A decrease in magnitude of current, voltage, or power of a signal in transmission between points. It can be expressed in decibels or nepers.

attribute. (1) A characteristic. (2) A terminal display language or transformation definition language (TDL) keyword that specifies a particular quality for the TDL object with which it is associated.

auto-answer. See *automatic answering*.

automatic answering. (1) Answering in which the called data terminal equipment (DTE) automatically responds to the calling signal.

Note: The call can be established whether or not the called DTE is attended.

(2) A machine feature that permits a station to respond without operator action to a call it receives over a switched line. See also *manual answering*. Contrast with *automatic calling*.

automatic calling. (1) Calling in which the elements of the selection signal are entered into the data network contiguously at the full data signaling rate. (2) A machine feature that permits a station to initiate a connection with another station over a switched line without operator action. (3) Synonymous with auto-call. See also *manual calling*. Contrast with *automatic answering*.

auto removal. Removing a device from the data-passing activity without human intervention. This action is accomplished by the adapter.

B

backup copy. A copy, usually of a program or of a library member, that is kept in case the original or the working copy is unintentionally altered or destroyed.

backup diskette. A diskette that contains information copied from another diskette. It is used in case the original information is unintentionally altered or destroyed.

baseband. (1) A frequency band that uses the complete bandwidth of a transmission medium. Contrast with *broadband, carrierband*. (2) A method of data transmission that encodes, modulates, and impresses information on the transmission medium without shifting or altering the frequency of the information signal.

beaconing. An error-indicating function of token-ring adapters that assists in locating a problem causing a hard error on a token-ring network.

binary. (1) Pertaining to a system of numbers to the base two; the binary digits are 0 and 1. (2) Pertaining to a selection, choice, or condition that has two possible different values or states.

binary synchronous communications (BSC). Data transmission in which character synchronism is controlled by timing signals generated at the sending and receiving stations.

bit. Either of the binary digits: a 0 or 1.

bracket. In SNA, one or more chains of request units (RUs) and their responses, which are exchanged between two LU-LU half-sessions and represent a transaction between them. A bracket must be completed before another bracket can be started. Examples of brackets are data base inquiries/replies, update transactions, and remote job entry output sequences to workstations.

bridge. (1) A functional unit that connects two local area networks (LANs) that use the same logical link control (LLC) procedure but can use different medium access control (MAC) procedures. (2) See also *gateway*.

Note: A bridge connects networks or systems of the same or similar architectures, whereas a gateway connects networks or systems of different architectures.

buffer. (1) A portion of storage used to hold input or output data temporarily. (2) A routine or storage used to compensate for a difference in data rate or time of occurrence of events, when transferring data from one device to another.

burst. (1) In data communication, a sequence of signals counted as one unit in accordance with some specific criterion or measure. (2) To separate continuous-form paper into discrete sheets.

bus. A type of network topology where the network consists of a bidirectional communication path with defined end points.

bypass. To eliminate an attaching device or an access unit from a ring network by allowing the data to flow in a path around it.

byte. (1) A string that consists of a number of bits, treated as a unit, and representing a character. (2) A binary character operated upon as a unit and usually shorter than a computer word. (3) A string that consists of a particular number of bits, usually 8, that is treated as a unit, and that represents a character. (4) A group of 8 adjacent binary digits that represent one extended binary-coded decimal interchange code (EBCDIC) character.

C

cable segment. A section of cable between components or devices on a network. A segment may consist of a single patch cable, multiple patch cables connected together, or a combination of building cable and patch cables connected together. See *LAN segment, ring segment*.

cable-through. A method of cabling that allows multiple workstations to be attached to a single cable path.

cable wrap. A method of testing 5494 adapter cables. The cable wrap can be performed using an external wrap plug, or the wrap capability can be built into the cable.

cabling system. A system of communication wiring installed in a building to connect computers and communication equipment.

carrier. A continuous signal at a specific frequency that can be modulated or impressed with a second (information-carrying) signal.

carrierband. A frequency band in which the modulated signal is superimposed on a carrier signal (as differentiated from baseband), but only one channel is present on the medium (as differentiated from broadband). Contrast with *baseband, broadband*.

character buffer. The read/write storage used by a partition for storing character or graphic data for display or printing on a terminal.

character position. A location on the screen at which one character can be displayed; also, an addressed location in the buffer at which 1 character can be stored.

character set. (1) A defined collection of characters. (2) A group of characters used for a specific reason, for example, the set of characters a printer can print. (3) The collection of graphic characters required to support a specific language.

circuit. (1) A logic device. (2) One or more conductors through which an electric current can flow.

circuit switching. A process that, on demand, connects two or more data terminal equipment (DTE) devices and permits the exclusive use of a data circuit between them until the connection is released.

Clear to Send (CTS) flow control. A procedure for a communicating device to signal its readiness to receive data by raising the CTS lead on an EIA 232D interface.

cluster. A station that consists of a control unit (a cluster controller) and the terminals attached to it.

coaxial cable. A cable consisting of one conductor, usually a small copper tube or wire, within and insulated from another conductor of larger diameter, usually copper tubing or copper braid.

command. (1) A request for performance of an operation or execution of a program. (2) A character string from a source external to a system that represents a request for system action.

common carrier. In the USA, a government-regulated private company (such as a telephone or telegraph company) that furnishes the general public with telecommunication service facilities.

communication cable. The EIA 232D, CCITT X.21 or CCITT V.35 cable used to attach the IBM 5494 to a modem or DCE.

communication facility. The term used to identify a nonswitched or switched network (dial-up).

communication link. (1) The assembly of parts of two data terminal equipment that are controlled by a link protocol, and the interconnecting data circuit, that enable data to be transferred from a data source to a data sink. (2) Synonymous with data link.

Note: A communications link includes the physical media of transmission, the protocol, and associated devices and programs -- it is both logical and physical.

communication network. The equipment and software required to transmit data signals between a AS/400 system and a remote site.

component. (1) Any part of a network other than an attaching device. (2) Hardware or software that is part of a functional unit.

concurrent host attachment. A function that enables the 5494 to communicate with one to four AS/400 systems over a single physical link.

concurrent mode. An operating mode of the control unit that allows certain diagnostics to be done at the same time that the control unit is doing normal operations.

configuration. (1) The arrangement of a computer system or network as defined by the nature, number, and chief characteristics of its functional units. More specifically, the term may refer to a hardware configuration or a software configuration. (I) (A) (2) The devices and programs that make up a system, subsystem, or network. (3) See also *system configuration*.

connect. In a LAN, to physically join a cable from a station to an access unit or network connection point. Contrast with *attach*.

connector. A means of establishing electrical flow.

control block. In the IBM Token-Ring Network, a specifically formatted block of information provided from the application program to the Adapter Support Interface to request an operation.

control character. (1) A character whose occurrence in a particular context specifies a control function. (2) A character used to specify that a control unit is to perform a particular operation.

controller. A unit that controls input/output operations for one or more devices.

control point (CP). (1) A component of a node that manages resources of that node and optionally provides services to other nodes in the network. (2) A component of a type 2.1 node that manages the resources of that node. If the type 2.1 node is an APPN node, the CP is capable of engaging in CP-CP sessions with other APPN nodes. If the type 2.1 node is a network node, the CP also provides services to adjacent end nodes in the type 2.1 network.

control unit. A general term for any device that provides common functions for other devices or mechanisms. Synonym for *controller*.

copy operation. An operation that copies the contents of the buffer from one terminal to another terminal attached to the same control unit.

coupler. See *data coupler*.

customer engineer (CE). An individual who provides field services for IBM products.

cyclic redundancy check (CRC). A system of error checking performed at both the sending station and the receiving station after a block check character sequence has been accumulated.

D

data access arrangement (DAA). (Canada, Japan, and US. For the US, applies only when the attaching device is not FCC registered.) An electrical isolation device, required by common carriers enabling attachment of privately owned data terminal equipment and telecommunication equipment to a network. It provides dc voltage isolation and limits excessive signal levels into the telecommunication line from the modem. See *data coupler*.

data circuit-terminating equipment (DCE). In a data station, the equipment that provides the signal conversion and coding between the data terminal equipment (DTE) and the line.

Notes:

1. The DCE can be separate equipment or an integral part of the DTE or of the intermediate equipment.
2. A DCE can perform other functions that are usually performed at the network end of the line.

data communication. (1) Transfer of information between functional units by means of data transmission according to a protocol. (2) The transmission, reception, and validation of data.

data coupler. An electrical isolation device usually required by a common carrier to attach to the carrier's switched telephone lines. This is also referred to as a data access arrangement or protective coupler.

data-derived clocking. A characteristic of the modem operation when the synchronization of receive clock signals is dependent on the presence of receive data transitions; that is, receive data is not continuous 0-bits or 1-bits.

Data Entry keyboard. A keyboard layout designed for data entry applications.

data link. Any physical link, such as a wire or a telephone circuit, that connects one or more devices or communication controllers.

data link connection identifier (DLCI). A numeric identifier that is used in a frame-relay network to identify the next segment of a permanent virtual circuit over which a frame is to be relayed.

data link control (DLC). A set of rules used by nodes on a data link (such as an SDLC link or a token ring) to accomplish an orderly exchange of information.

data link control (DLC) protocol. The LAN protocol used to attach a device to and remove a device from the network. The DLC protocol is also used to send information onto and receive information from the network, exchange data, and control information with network higher level protocols and interfaces.

data network identification code. A four-digit code added as a prefix to the network address when the receiving DTE is attached to another network or is located in another country.

data rate. See *data transfer rate, line data rate.*

Data Service Unit (DSU). A device that provides a digital data service interface directly to the data terminal equipment. The DSU provides loop equalization, remote and local testing capabilities, and a standard EIA/CCITT interface.

data set ready (DSR). A control signal associated with the EIA 232D physical interface that is active when the modem or DCE is ready to begin data transfer.

data stream. (1) All data transmitted through a data channel in a single read or write operation. (2) A continuous stream of data elements being transmitted, or intended for transmission, in character or binary-digit form, using a defined format.

data terminal equipment (DTE). That part of a data station that serves as a data source, data sink, or both.

data terminal ready (DTR) flow control. A procedure for a communicating device to signal its readiness to receive data by raising the DTR lead on an EIA 232D interface.

data transfer. (1) The result of the transmission of data signals from any data source to a data receiver. (2) The movement, or copying, of data from one location and the storage of the data at another location.

data transfer mode. Synonym for *data transfer phase.*

data transfer phase. (1) The phase of a data call during which data signals can be transferred between data terminal equipment (DTEs) connected by the network. (2) Synonymous with *data transfer mode.*

data transfer rate. The average number of bits, characters, or blocks per unit of time passing between equipment in a data-transmission session. The rate is expressed in bits, characters, or blocks per second, minute, or hour.

decibel. A unit for expressing the ratio of two amounts of electric or acoustic signal power.

delimiter. (1) A character used to indicate the beginning or end of a character string. (2) A bit pattern that defines the beginning or end of a frame or token on a LAN.

dependent workstation (DWS). See *nonprogrammable workstation.*

device. (1) A mechanical, electrical, or electronic contrivance with a specific purpose. (2) An input/output unit such as a terminal, display, or printer. See also *attaching device.*

diacritic. An accent near or through a character or combination of characters indicating a phonetic value different from that given the unmarked or otherwise marked element. Examples of diacritics include acute accent, grave accent, tilde, and breve.

diagnostics. Modules or tests used by computer users and service personnel to diagnose hardware problems.

Disk Operating System (DOS). A program that controls the operation of an IBM Personal Computer and the execution of application programs.

display station. An input/output device containing a display screen and an attached keyboard that allows a user to send information to or receive information from the system. Synonymous with *workstation.*

distribution panel. A wiring board that provides a patch panel function and mounts in a rack.

double-byte character set (DBCS). A set of characters in which each character is represented by 2 bytes. Languages such as Japanese, Chinese, and Korean, which contain more symbols than can be represented by 256 code points, require double-byte character sets. Because each character requires 2 bytes, typing, display, and printing of DBCS characters requires hardware and programs that support DBCS. Contrast with single-byte character set.

downstream. (1) In the direction of data flow or toward the destination of transmission. (2) From the processor toward an attached unit or end user. (3) Contrast with *upstream*.

downstream physical unit (DSPU). A controller or a workstation downstream from a gateway that is attached to an AS/400 system.

drop. In the IBM Cabling System, a cable that runs from a faceplate to the distribution panel in a wiring closet.

duplex. Pertaining to communication in which data can be sent and received at the same time. Synonymous with *full duplex*.

dump. (1) To write at a particular instant the contents of storage, or part of storage, onto another data medium for the purpose of safeguarding or debugging the data. (2) Data that has been dumped.

E

EIA 232D. An electrical interface defined by the Electronics Industries Association for establishing connections and controlling data flow between data terminal equipment and data communication equipment. The interface has been adapted to allow communication between DTEs.

emulation. (1) The imitation of all or part of one system by another, primarily by hardware, so that the imitating system accepts the same data, executes the same programs, and achieves the same results as the imitated computer system. (2) The use of programming techniques and special machine features to permit a computing system to execute programs written for another system. (3) Imitation; for example, imitation of a computer or device. (4) See *terminal emulation*.

enabled. On a local area network, pertaining to an adapter or device that is active, operational, and able to receive frames from the network.

end-of-message delimiter. A 111 in the station ID that indicates the last frame of a twinaxial message block.

enhanced logical link control (LLC). A type of logical link control used in X.25 communication.

error log. A record of errors that is kept internally by the control unit.

Ethernet. (1) A 10-Mbps baseband local area network that allows multiple stations to access the transmission medium at will without prior coordination, avoids contention by using carrier sense and deference, and resolves contention by collision detection and transmission. Ethernet uses carrier sense multiple access with collision detection (CSMA/CD). (2) A passive coaxial cable whose interconnections contain devices or components, or both, that are all active. It uses CSMA/CD technology to provide a best-effort delivery system.

Ethernet network. A baseband LAN with a bus topology in which messages are broadcast on a coaxial cable using a carrier sense multiple access/collision detection (CSMA/CD) transmission method.

extended binary-coded decimal interchange code (EBCDIC). A coded character set of 256 eight-bit characters.

F

fault. An accidental condition that causes a functional unit to fail to perform its required function.

field replaceable unit (FRU). An assembly that is replaced in its entirety when any one of its components fails. In some cases a FRU may contain other FRUs; for example, a brush and a brush block that can be replaced individually or as a single unit.

| **filter.** A set of criteria which determine whether or not a frame crosses
| a bridge.

file. A named set of records stored or processed as a unit.

fixed disk. A rigid magnetic disk used in a fixed disk drive.

fixed disk drive. A disk storage device that reads and writes on rigid magnetic disks.

flow control. (1) In data communication, control of the data transfer rate. (2) In SNA, the process of managing the rate at which data traffic passes between components of the network. The purpose of flow control is to optimize the rate of flow of message units with minimum congestion in the network, that is, neither to overflow the buffers at the receiver or at intermediate routing nodes nor to leave the receiver waiting for more message units. (3) The methods used to control the flow of information across a network.

flow control negotiation. The ability to alter packet size and packet window size. These can be changed from call to call if the network subscription allows flow control negotiation.

fractional T1. Fractional T1 is the process whereby individual channels on a T1 multiplexer are allocated portions of the 1.544 Mbps transmission rate available on a T1 interface.

frame relay. An interface standard describing the boundary between a user's equipment and a fast-packet network. In frame-relay systems, flawed frames are discarded; recovery comes end-to-end rather than hop-by-hop.

frame-relay network. A network that consists of frame-relay frame handlers (FRFH) and in which frames are passed from one frame-relay terminal equipment station to another through a series of one or more FRFHs.

free-key mode. An operating mode that allows displaying of data without control by a system program (unformatted). The mode that the workstation is in before logon to the system.

from diskette. The diskette that provides the data to be transferred.

full duplex. Synonym for *duplex*.

G

gateway. (1) A functional unit that connects two computer networks of different network architectures.

Note: A gateway connects networks or systems of different architectures. A bridge interconnects networks or systems with the same or similar architectures.

H

half-duplex. In data communication, pertaining to transmission in only one direction at a time. Contrast with *duplex*.

hard error. An error condition on a network that requires that the network be reconfigured or that the source of the error be removed before the ring can resume reliable operation. Contrast with *soft error*.

hardware. Physical equipment as opposed to programs, procedures, rules, and associated documentation.

hertz (Hz). A unit of frequency equal to 1 cycle per second.

hexadecimal. (1) Pertaining to a selection, choice, or condition that has 16 possible values or states. (2) Pertaining to a fixed-radix numeration system, with radix of 16. (3) Pertaining to a numbering system with base of 16; valid numbers use the digits 0 through 9 and characters A through F, where A represents 10 and F represents 15.

host logical unit (LU). An SNA logical unit (LU) located in a AS/400 system processor, for example, an ACF/VTAM* application program.

host system. (1) A data processing system used to prepare programs and operating environments for use on another computer or controller. (2) The data processing system to which a network is connected and with which the system can communicate. (3) The controlling or highest-level system in a data communication configuration; for example, a System/38 is the AS/400 system for the workstations connected to it.

I

IBM Cabling System. A permanently installed wiring system that eliminates the need to rewire when terminals are moved from one location to another within an office complex. It allows transmission of data at very high speeds and is the foundation for installing a local area network. Compare with *twinaxial cable* and *telephone twisted-pair (TTP) cable*.

Note: It is used to pass information between devices separated by up to 1524 m (5000 ft).

ideographic. A character set consisting of both graphics and pictograms, and often other types of symbols, such as Japanese characters.

incoming calls barred. A facility that prevents all incoming calls to a DTE on all logical channels for a period of time.

independent workstation (IWS). See *programmable workstation*.

initialization. A process that prepares for the beginning of another process.

input/output (I/O). (1) Pertaining to a device whose parts can perform an input process and an output process at the same time. (2) Pertaining to a functional unit or channel involved in an input process, output process, or both, concurrently or not, and to the data involved in such a process. (3) Pertaining to input, output, or both.

J

jack. A connecting device to which a wire or wires of a circuit can be attached and that is arranged for insertion of a plug.

K

keyboard translate table (KTT). A translate table downloaded from the AS/400 system during the power-on process of a device. The new table replaces the default keyboard translate table of the device. See *translate table*.

L

LAN segment. (1) Any portion of a LAN (for example, a single bus or ring) that can operate independently but is connected to other parts of the establishment network via bridges. (2) An entire ring or bus network without bridges. See *cable segment, ring segment*.

leased line. Synonym for *nonswitched line*.

light pen. A light-sensitive pick device that is used by pointing it at the display surface.

line data rate. The rate of data transmission over a telecommunications link.

link. (1) The logical connection between nodes including the end-to-end link control procedures. (2) The combination of physical media, protocols, and programming that connects devices on a network. (3) In computer programming, the part of a program, in some cases a single instruction or an address, that passes control and parameters between separate portions of the computer program. (4) To interconnect items of data or portions of one or more computer programs. (5) In SNA, the combination of the link connection and link stations joining network nodes.

link management interface (LMI). The interface over which status messages are exchanged between two points in a frame-relay network.

link station. (1) A specific place in a service access point (SAP) that enables an adapter to communicate with another adapter. (2) A protocol machine in a node that manages the elements of procedure required for the exchange of data traffic with another communicating link station. (3) A logical point

within a SAP that enables an adapter to establish connection-oriented communication with another adapter. (4) In SNA, the combination of hardware and software that allows a node to attach to and provide control for a link.

lobe. In the IBM Token-Ring Network, the section of cable that attaches a device to an access unit. The cable can consist of several segments.

lobe receptacle. In the IBM Token-Ring Network, an outlet on an access unit for connecting a lobe.

local. Pertaining to a device accessed directly without use of a telecommunication line.

local area network (LAN). (1) Physical network technology that transfers data at high speed over short distances. (2) A network in which a set of devices are connected to one another for communication and that can be connected to a larger network. See also *token ring* and *Ethernet*. (3) A computer network located on a user's premises within a limited geographical area. Communication within a local area network is not subject to external regulations; however, communication across the LAN boundary may be subject to some form of regulation.

local loopback. A test procedure done to verify the operation of the local modem.

local network address. The network address of the control unit. Some networks require this to be sent with the AS/400 system network address on a call from the control unit to the AS/400 system.

local session identifier (LSID). An 8-bit sequence in the transmission header for SNA that contains the logical unit address and session path information.

local unit ID. A customer-assigned identification.

logical channel. In packet mode operation, one logical channel is used for each PVC or SVC. Several logical channels can be established on the same data link by interleaving the transmission of packets.

logical channel identifier. A 12-bit number used to identify a logical channel. It consists of a 4-bit logical channel group number and an 8-bit logical channel number.

logical connection. In a network, devices that can communicate or work with one another because they share the same protocol. See also *physical connection*.

logical link. A logical link is a link entity with the property that multiple logical links can be distinguished while they share the use of the same physical media connecting two physical nodes. Examples are 802.2 logical links used on LAN facilities and LAP E logical links on the same point-to-point physical link between two nodes. The term logical link also includes the multiple X.25 logical channels which flow on the access link from a DTE to an X.25 network.

logical link control (LLC). Information included in data packets for X.25 that provides end-to-end link level type functions to the SNA layers in the AS/400 system and the IBM 5494.

logical unit (LU). In SNA, a port through which an end user accesses the SNA network in order to communicate with another end user and through which the end user accesses the functions provided by system services control points (SSCPs). An LU can support at least two sessions, one with an SSCP and one with another LU, and can be capable of supporting many sessions with other logical units.

logical unit ID. A customer-assigned identification.

logical unit 6.2 (LU 6.2). A particular type of Systems Network Architecture (SNA) logical unit (LU) that provides a connection between resources and transaction programs running on different network nodes.

loopback. The connecting of the input and output lines of a device for testing.

LU 6.2. (1) In SNA, a type of session between two application programs in a distributed processing environment. (2) An LU-LU session protocol as defined by SNA to support distributed processing.

M

maintenance analysis procedure (MAP). A maintenance document that gives an IBM service representative a step-by-step procedure for tracing a symptom to the cause of a failure.

make-break key. On a control unit terminal (CUT) device, a key that sends a signal to the control unit, invoking a function, both when the key is first pressed down (make) and again when it is released (break).

mandatory fill. An information field that must be completely filled to be correct.

manual answering. (1) Answering in which a call is established only if the called user signals a readiness to receive the call by means of a manual operation. (2) Operator actions to prepare a station to receive a call on a switched line. Contrast with *automatic answering*.

manual calling. (1) Calling that permits the entry of selection signals from a calling data station at an undefined character rate. (2) Operator actions to place a call over a switched line. Contrast with *automatic calling*.

manual options. Options that allow the workstation operator to change call parameters from one call to the next.

mark. A symbol or symbols that indicate the beginning or the end of a field, a word, an item of data or a set of data such as a file, record, or block.

medium access control (MAC) frame. Frames that control the operation of the IBM Token-Ring Network and any ring station operations that affect the ring.

medium access control (MAC) procedure. In a local area network, the part of the protocol that governs access to the transmission medium independently of the physical characteristics of the medium, but taking into account the topological aspects of the network, in order to enable the exchange of data between data stations.

memory. Program-addressable storage from which instructions and other data can be loaded directly into registers for subsequent execution or processing.

microcode. (1) One or more microinstructions. (2) A code, representing the instructions of an instruction set, that is implemented in a part of storage that is not program-addressable. (3) To design, write, and also test one or more microinstructions.

microprocessing unit (MPU). A processing unit that is microprogram-controlled and does internal machine operations. The MPU receives data, controls the display of data, and controls the flow of information to and from the control unit.

microseconds per division (us/div). A setting on the oscilloscope.

milliseconds per division (ms/div). A setting on the oscilloscope.

modem (modulator/demodulator). A device that converts digital data from a computer to an analog signal that can be transmitted on a telecommunication line, and converts the analog signal received to data for the computer.

modified data tag (MDT). A bit in the attribute character of a display field that, when set, causes that field to be transferred to the channel during a read-modified operation. The modified data tag can be set by a keyboard input to the field, a selector-pen detection in the field, a card read-in operation, or program control. The modified data tag can be reset by a selector-pen detection in the field, program control, or ERASE INPUT key.

multiplexer. A device for handling multiple signals over a signal line.

multistation access unit. In the IBM Token-Ring Network, a wiring concentrator that can connect lobes to a ring.

N

network. (1) An arrangement of nodes and connecting branches. Connections are made between data stations. (2) A configuration of data processing devices and software connected for information interchange.

network address. The number that the network uses to identify a DTE. The workstation operator must key in an AS/400 system network address in order to initiate a call to an AS/400 system.

network addressable unit (NAU). In SNA, a logical unit, a physical unit, or a system services control point. The NAU is the origin or the destination of information transmitted by the path control network.

network administrator. A person who manages the use and maintenance of a network.

node. (1) Any device, attached to a network, that transmits and/or receives data. (2) An endpoint of a link, or a junction common to two or more links in a network. (3) In a network, a point where one or more functional units interconnect transmission lines.

nonprogrammable workstation (NWS). A nonprogrammable workstation or a PC, PS/2 computer, or PS/55 computer using a terminal emulation program.

non-return to zero (NRZ). A data encoding method where a change in voltage indicates a one (1).

non-return to zero inverted (NRZI). A data encoding method.

nonswitched line. (1) A connection between systems or devices that does not have to be made by dialing. Contrast with *switched line*. (2) A telecommunication line on which connections do not have to be established by dialing. Synonymous with *leased line*.

nonsynchronous modem. A modem that does not supply clock signals and that requires clocking from the attached device.

normal mode. Operating mode that exists after 5494 power is turned on with the Test switch set to Off and the Ready LED has come on.

Nr count. The sequence number of the next expected Ns field of the next I frame received.

Ns count. The number of sequence frames in SDLC that have been sent.

O

off-hook. A telephone set in use.

offline. Pertains to the control unit when it is not communicating with the AS/400 system.

offline test. A diagnostic test or data collection program that must be run when the 5494 and its connected terminals are not in normal operation.

ohm. The practical meter-kilogram-second unit of electric resistance equal to the resistance of a circuit in which a potential difference of 1 volt produces a current of 1 ampere.

on-hook. A telephone set not in use.

online. Pertains to the control unit when it is communicating with the AS/400 system.

online test. A diagnostic test or data collection program that is run without interrupting the normal operation of the 5494 and its associated terminals.

open. (1) To make an adapter ready for use. (2) A break in an electrical circuit.

operating system. Software that controls the execution of programs. An operating system may provide services such as resource allocation, scheduling, input/output control, and data management. Examples are IBM PC DOS and IBM OS/2.

Operating System/2 (OS/2). A set of programs that control the operation of high-speed large-memory IBM personal computers (such as the IBM Personal System/2 computer, Models 50 and above), providing multitasking and the ability to address up to 16 MB of memory. Contrast with *Disk Operating System (DOS)*.

options. The selections on a display screen menu for test requests.

order code. A code that can be included in the write data stream transmitted for a workstation or printer; provides additional formatting or definition of the write data.

Origin-Destination Assignor Identifier (ODAI). The ODAI is a bit in a FID2 transmission header used to divide the address space so that an address space manager (ASM) in one node can use all possible combinations of OAFⁱ, DAFⁱ, with the ODAI having one setting and the ASM in the adjacent node can use all possible combinations of OAF^j, DAF^j with the ODAI having the complimentary setting.

P

packet. Information transmitted through a packet switched network is divided up and inserted into packets. These usually consist of control information fields giving destination, sequence number, optional facilities, and often a user data area. Various kinds of packets are used to transmit error codes and supervise the virtual circuit.

packet switching. The transfer of data by means of addressed packets that occupy the network channel only during actual transmission. The channel is available for the simultaneous transfer of packets belonging to other network users. The network determines the optimum routing of each individual

packet during, rather than prior to, the transmission from a DTE.

parameter. (1) A variable that is given a constant value for a specified application and that can denote the application. (2) An item in a menu for which the user specifies a value or for which the system provides a value when the menu is interpreted. (3) Data passed between programs or procedures.

parity check. (1) A redundancy check by which a recalculated parity bit is compared with the pre-given parity bit. (2) A check that tests whether the number of ones (or zeros) in an array of binary digits is odd or even.

password. In computer security, a string of characters known to the computer system and a user, who must specify it to gain full or limited access to a system and to the data stored within it.

path. In a network, a route between any two nodes.

permanent virtual circuit (PVC). The packet switched equivalent of a leased line. The 5494 and its AS/400 system appear to the user to be permanently connected.

P/F. Poll bit for primary station; final frame bit for secondary station.

physical connection. The ability of two connectors to mate and make electrical contact. In a network, devices that are physically connected can communicate only if they share the same protocol. See also *logical connection*.

physical unit (PU). In SNA, the component that manages and monitors the resources (such as attached links and adjacent link stations) of a node, as requested by an SSCP through an SSCP-SSCP session.

planar. The basic printed circuit electronic board.

poll. The method a primary station (AS/400 system) or a secondary station (control unit) uses to request other workstations to transmit or receive data.

polling. (1) On a multipoint connection or a point-to-point connection, the process whereby data stations are invited one at a time to transmit. (2) Interrogation of devices for such purposes as to avoid contention, to determine operational status, or to determine readiness to send or receive data.

port. (1) An access point for data entry or exit. (2) A connector on a device to which cables for other devices such as workstations and printers are attached.

Post Telephone and Telegraph Administration (PTT). An organization, usually a government department, that provides communication common carrier services in countries other than the USA and Canada. An example of a PTT is the Bundespost in Germany.

power-on self-test (POST). A series of diagnostic tests that are run each time the unit's power is turned on.

primary host. The primary host is the first host with which the 5494 establishes a session. It is the host from which the 5494 receives code corrections (AS/400 PTFs for the 5494).

printer definition table (PDT). A translate table downloaded from an AS/400 during the power-on process of a 3477 or 3487 device while the 3477 or 3487 device is attaching to an ASCII printer. The new translate table replaces the 3477 or 3487 default translate table. See *translate table*.

program access (PA) key. On a display device keyboard, a key that produces a call to a program that performs display operations. See also *program function (PF) key*.

program function (PF) key. On a display device keyboard, a key that passes a signal to a program to call for a particular display operation. See also *program access (PA) key*.

programmable workstation (PWS). A workstation that can operate independently of an AS/400 system but can also communicate with an AS/400 system. For the 5494, this is a PC or PS/2 computer using PC Support/400, a PS/55 computer using 5250 PC/2 AD Support, or a PC or PS/2 computer using OS/2 Communications Manager 5250 Workstation feature.

protocol. (1) A set of semantic and syntactic rules that determine the behavior of functional units in achieving communication. (2) In SNA, the meanings of and the sequencing rules for requests and responses used for managing the network, transferring data, and synchronizing the states of network components.

protocol conversion. For the AEA feature, emulation of one device protocol by a device designed for a different protocol.

public switched network (PSN). A communication facility owned by a telephone company through which subscribers can be connected by dialing the unique telephone number of another subscriber.

Q

qualified logical link control (QLLC). A type of logical link control used in X.25 communication.

R

random access memory (RAM). A storage device into which data is entered and from which data is retrieved in a nonsequential manner.

read-only memory (ROM). A computer's storage area whose contents cannot be modified.

Recommendation V.24. A recommendation for interfaces set by the CCITT and amended periodically. V.24 is a specification that defines the list of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE). (Includes, but is not limited to interchange circuits defined in EIA-232D and EIA-366.)

Recommendation V.28. A recommendation for interfaces set by the CCITT and amended periodically. In data communications, electrical characteristics for unbalanced double-current interchange circuits. (These characteristics are identical to those defined in EIA-232D.)

Recommendation V.35. A recommendation for electrical characteristics for balanced double-current interchange circuits.

Recommendation X.21. In data communication, a recommendation of the International Telegraph and Telephone Consultative Committee (CCITT) that defines the interface between data terminal equipment and public data networks for digital leases and circuit switched synchronous services.

Recommendation X.21 bis. Recommendation for a type of data circuit-terminating equipment that converts signals between EIA signal lines and those associated with an X.21 interface.

Recommendation X.24. Recommendation listing definitions for interchange circuits between the DTE and the DCE on public data networks.

Recommendation X.25. In data communication, a recommendation of the CCITT that defines the interface between data terminal equipment and packet switching networks.

receptacle. See *lobe receptacle*.

Recognized Private Operating Agency (RPOA). A CCITT term for organizations that provide network services.

register. (1) A storage area in a computer's memory where specific data is stored. (2) A storage device having a specified storage capacity such as bit, byte, or computer word, and usually intended for a special purpose.

remote. Pertaining to a system, program, or device that is accessed through a telecommunication line.

remote attachment. Attachment of workstations to the AS/400 system through communication lines, and usually through an intermediate control unit.

remote workstation. A workstation that is attached to the AS/400 system through communication lines.

remove. (1) To take an attaching device off a network. (2) To stop an adapter from participating in passing data on a network.

return code. (1) A code used to influence the execution of succeeding instructions. (2) A value returned to a program to indicate the results of an operation requested by that program.

ring network. A network configuration where a series of attaching devices are connected by unidirectional transmission links to form a closed path.

ring segment. A ring segment is any section of a ring that can be isolated (by unplugging connectors) from the rest of the ring. A segment can consist of a single lobe, the cable between access units, or a combination of cables, lobes, and/or access units. See *cable segment, LAN segment*.

ring status. The condition of the ring.

ripple level. A voltage measurement.

root-mean-squared (RMS). Indicates the effective value of an ac voltage.

routing. (1) The assignment of the path by which a message will reach its destination. (2) In SNA, the forwarding of a message unit along a particular path through a network, as determined by parameters carried in the message unit, such as the destination network address in a transmission header.

S

segment. A section of cable between components or devices on the network. A segment can consist of a single patch cable, multiple patch cables connected, or a combination of building cable and patch cables connected.

segmenting. In SNA, the dividing of a basic information unit (BIU) into two or more path information units (PIU).

serial. (1) Pertaining to a process in which all events occur one after the other; for example, serial transmission of the bits of a character according to V24 CCITT protocol. (2) Pertaining to the sequential or consecutive occurrence of two or more related activities in a single device or channel. (3)

Pertaining to the sequential processing of the individual parts of a whole, such as the bits of a character or the characters of a word, using the same facilities for successive parts.

serializer/deserializer (SERDES). A register that is used to send data from the workstation to the control unit, one bit at a time. The data is entered serially and read out parallel, or it is entered parallel and read out serially.

Service Access Point (SAP). A logical point made available by an adapter where information can be received and transmitted. A single SAP can have many links terminating in it.

session. (1) In network architecture, an association of facilities necessary for establishing, maintaining, and releasing connections for communication between stations. (2) In MLT, synonymous with logical terminal (LT). (3) In SNA, a logical connection between two network addressable units that can be activated, tailored to provide various protocols, and deactivated as requested.

Set Attribute (SA) order. (1) An order that specifies an attribute-type-value pair defining the property to be applied to subsequent characters in the data stream. An SA order is required for each property assigned. (2) An order that associates attributes in the EAB with individual characters.

short hold mode (SHM). An X.21 switched communication option that allows a link between two stations to remain established only when there is data to transfer. The 5494 supports, but does not initiate, an SHM session. The AS/400 system determines and controls SHM sessions.

single-byte character set (SBCS). A character set in which each character is represented by a one-byte code. Contrast with double-byte character set.

SNA character string (SCS). A character string composed of EBCDIC controls, optionally intermixed with end-user data, that is carried within a request/response unit.

soft error. An intermittent error on a network that requires retransmission. Contrast with *hard error*.

Note: A soft error by itself does not affect overall reliability of the network, but reliability can be affected if the number of soft errors reaches the ring error limit.

| **spanning tree.** In LAN contexts, the method by which bridges automatically
| develop a routing table and update that table in response to changing
| topology to ensure that there is only one route between any two LANs in
| the bridged network.

| **spanning tree explorer (STE).** Are frames that are intended to be
| forwarded only by ports assigned to forward them by the spanning tree
| protocol. (See all routes explorer for a contrasting frame type.)

station. (1) An input or output point of a system that uses telecommunication facilities; for example, one or more systems, computers, terminals, devices, and associated programs at a particular location that can send or receive data over a telecommunication line. (2) A location in a device at which an operation is performed, for example, a read station. (3) In SNA, a link station.

subscription. An agreement between a user and a PTT/network supplier for the use of certain network services and optional facilities.

storage. A unit into which recorded text can be entered, in which it can be retained and processed, and from which it can be retrieved. See also *memory*.

switched line. A telecommunication line in which the connection is established by dialing. Contrast with *nonswitched line*.

switched network backup (SNBU). An optional facility that allows a user to specify a switched line to be used as an alternate path if the primary line becomes unavailable or unusable.

switched virtual circuit (SVC). A switched virtual circuit is the packet switched service equivalent of a switched line. It allows communication between the 5494 and one of several possible AS/400 systems. Switched virtual circuits are also known as virtual calls.

synchronous. (1) Pertaining to two or more processes that depend on the occurrences of a specific event, such as common timing signal. (2) Occurring with a regular or predictable time relationship.

Synchronous Data Link Control (SDLC). A discipline conforming to subsets of the Advance Data Communication Control Procedures (ADCCP) of the American National Standards Institute (ANSI) and High-level Data Link Control (HDLC) of the International Organization for Standardization, for managing synchronous, code-transparent, serial-by-bit information transfer over a link connection. Transmission exchanges can be duplex or half-duplex over switched or nonswitched links. The configuration of the link connection can be point-to-point, multipoint, or loop. See also *binary synchronous communication (BSC)*.

system configuration. A process that specifies the devices and programs that form a particular data processing system.

system operator. A person who uses a personal computer or workstation that is designated as the system console, to activate certain system functions, and to control and monitor system operation.

system reference code (SRC). A system-generated code, either four or six digits, indicating an error or condition. This code is displayable on any attached workstation.

system services control point (SSCP). In SNA, the focal point within an SNA network for managing the configuration, coordinating network operator and problem determination requests, and providing directory support and other session services for end users of the network. Multiple SSCP, cooperating as peers, can divide the network into domains of control, with each SSCP having a hierarchical control relationship to the physical units and logical units within its domain.

Systems Network Architecture (SNA). The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through, and controlling the configuration and operation of, networks.

T

target X.25 DTE. The target X.25 DTE is the X.25 DTE at the adjacent link station.

telecommunication network. In a telecommunication system, the combination of all terminals and other telecommunication devices and the lines that connect them.

telephone twisted-pair (TTP) cable. An unshielded cable with two or more pairs of insulated copper wire twisted together at a minimum of two twists per foot. This type of cable is commonly used in telephone installations for voice transmission. It can also be used for data transmission.

terminal multiconnector. A device used to connect as many as seven workstations to a single port on the 5494. The IBM 5299 Terminal Multiconnector can be used when cable-through is inappropriate or unavailable.

terminal emulation. The capability of a microcomputer, personal computer, 3270 CUT mode workstation, 3270 printer, ASCII workstation, or ASCII printer to operate as if it were a particular type of terminal linked to a processing unit and to access data.

terminator switch. A switch used to terminate the system cable on the last workstation when cable-through is used and to provide a feed-through path for other stations on the cable-through line.

threshold (receive levels). A specific voltage level that is compared to a signal in order to determine whether that signal is active or inactive.

timeout. (1) An event that occurs at the end of a predetermined period of time that began at the occurrence of another specified event. (2) A time interval allotted for certain operations to occur; for example, response to polling or addressing before system operation is interrupted and must be restarted. (3) A terminal feature that logs off a user if an entry is not made within a specified period of time.

token. In a local area network, the symbol of authority passed among data stations to indicate the station temporarily in control of the transmission medium.

Note: A token is a particular message or bit pattern that signifies permission to transmit.

Token-Ring connection. A method of connecting a workstation to the 5494 through a Token-Ring network.

Token-Ring network. (1) A ring network that allows unidirectional data transmission between data stations by a token-passing procedure over one transmission medium so that the transmitted data returns to the transmitting station. (2) A network that uses a ring topology, in which tokens are passed in a circuit from node to node. A node that is ready to send can capture the token and insert data for transmission.

translate table. A table that defines the translation of EBCDIC to ASCII and that allows the use of special characters and nonstandard codes. For KTT, it defines what EBCDIC characters are displayed for a particular key.

transmit activity check. An error condition detected by the workstation adapter on the control unit planar when the data transmitted to the twinaxial line does not match the output from the workstation adapter.

transition. A point in time when a voltage or signal change occurs between two specified levels.

transmission coding. Non-return-to-zero change-on-ones recording (NRZI) or non-return-to-zero recording (NRZ).

twinaxial cable. A shielded cable with two conductors inside a larger conductor. The conductors are insulated from the larger conductor and from one another.

twinaxial workstation attachment. A cable that combines four twinaxial connections into one DSUB connection for attachment to the 5494 Remote Control Unit.

twisted pair. A transmission medium that consists of two insulated conductors twisted together to reduce noise.

Type 3 Media Filter cable. Consists of a filter housed in a 9-pin D-connector, 2.4 m (8 ft) of two-twisted-pair telephone wire, and a 6-pin modular plug. It can be used to connect the 5494 to a 6- or 8-pin modular jack.

U

unit address. The address used to define each remote workstation. This address is determined for the remote configuration (customer setup) and must be obtained for use by the AS/400 system.

upstream. (1) In the direction opposite to data flow or toward the source of transmission. (2) Toward the processor from an attached unit or end user. (3) Contrast with *downstream*.

Utility disk. A diskette or fixed disk that contains the code necessary to run various utilities, for example, to copy portions of a diskette for a backup diskette.

Utility (UTL) diskette. A diskette that contains the code necessary to run various utilities, for example, to copy portions of a diskette for a backup diskette.

V

V.24. See *Recommendation V.24*.

V.28. See *Recommendation V.28*.

V.35. See *Recommendation V.35*.

vary off. To make a workstation, control unit, or line unavailable for its normal intended use.

vary on. To make a workstation, control unit, or line available for its normal intended use.

virtual call. A call placed on a switched virtual circuit.

virtual circuit. A logical connection between two DTEs that enable them to exchange information according to a standard communication procedure with the sequence of information preserved. A virtual circuit occupies transmission capacity only when the data is actually being transmitted.

W

wideband. Synonym for *broadband*.

wire fault. An error condition caused by a break in the wires or a short between the wires (or shield) in a segment of cable.

workstation. An input/output device that allows transmission of data or reception of data as needed to perform a job.

workstation address. The address set by the operator during setup of the workstation. This address can be set on rocker switches, by keyboard entry, or by control panel entry.

workstation customization. To change characteristics about the way your device works with the AS/400 system.

wrap test. A test that checks attachment or control unit circuitry without checking the mechanism itself by returning the output of the mechanism as input. For example, when unrecoverable communication adapter or machine errors occur, a wrap test can transmit a specific character pattern to or through the modem in a loop and then compare the character pattern received with the pattern transmitted.

X

X.21. See *Recommendation X.21*.

X.21 bis. See *Recommendation X.21 bis*.

X.24. See *Recommendation X.24*.

X.25. See *Recommendation X.25*.

3

3270 data stream. (1) The commands, control codes, orders, attributes, and data or structured fields for 3270 devices, that are transmitted inbound to an application program or outbound to a terminal. (2) Data being transferred from or to an allocated primary or tertiary device, or to the AS/400 system, as a continuous stream of data and 3270 Information Display System control elements in character form.

5

5250 connection. A method of connecting a workstation to the 5494 using any cable that supports 5250 data stream communication. The cable can be twinaxial, telephone twisted-pair, IBM Cabling System, or fiber optic.

5250 workstation. An NWS or PWS that is attached to the 5494 using a 5250 connection.

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