

Supplement Header

Request for Taxpayer Identification Number and Certification

**Give Form to the
 requester. Do not
 send to the IRS.**

Print or type See Specific Instructions on page 2.	Name (as shown on your income tax return)	
	Business name/disregarded entity name, if different from above	
	Check appropriate box for federal tax classification (required): <input type="checkbox"/> Individual/sole proprietor <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate	
	<input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶	
	<input type="checkbox"/> Other (see instructions) ▶	
Address (number, street, and apt. or suite no.)		Requester's name and address (optional)
City, state, and ZIP code		
List account number(s) here (optional)		

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Social security number									

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Employer identification number									

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 4.

Sign Here	Signature of U.S. person ▶	Date ▶
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General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

The person who gives Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States is in the following cases:

- The U.S. owner of a disregarded entity and not the entity,
- The U.S. grantor or other owner of a grantor trust and not the trust, and
- The U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person, do not use Form W-9. Instead, use the appropriate Form W-8 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a “saving clause.” Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity not subject to backup withholding, give the requester the appropriate completed Form W-8.

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS a percentage of such payments. This is called “backup withholding.” Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See the instructions below and the separate Instructions for the Requester of Form W-9.

Also see *Special rules for partnerships* on page 1.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account, for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Name

If you are an individual, you must generally enter the name shown on your income tax return. However, if you have changed your last name, for instance, due to marriage without informing the Social Security Administration of the name change, enter your first name, the last name shown on your social security card, and your new last name.

If the account is in joint names, list first, and then circle, the name of the person or entity whose number you entered in Part I of the form.

Sole proprietor. Enter your individual name as shown on your income tax return on the “Name” line. You may enter your business, trade, or “doing business as (DBA)” name on the “Business name/disregarded entity name” line.

Partnership, C Corporation, or S Corporation. Enter the entity's name on the “Name” line and any business, trade, or “doing business as (DBA) name” on the “Business name/disregarded entity name” line.

Disregarded entity. Enter the owner's name on the “Name” line. The name of the entity entered on the “Name” line should never be a disregarded entity. The name on the “Name” line must be the name shown on the income tax return on which the income will be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a domestic owner, the domestic owner's name is required to be provided on the “Name” line. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on the “Business name/disregarded entity name” line. If the owner of the disregarded entity is a foreign person, you must complete an appropriate Form W-8.

Note. Check the appropriate box for the federal tax classification of the person whose name is entered on the “Name” line (Individual/sole proprietor, Partnership, C Corporation, S Corporation, Trust/estate).

Limited Liability Company (LLC). If the person identified on the “Name” line is an LLC, check the “Limited liability company” box only and enter the appropriate code for the tax classification in the space provided. If you are an LLC that is treated as a partnership for federal tax purposes, enter “P” for partnership. If you are an LLC that has filed a Form 8832 or a Form 2553 to be taxed as a corporation, enter “C” for C corporation or “S” for S corporation. If you are an LLC that is disregarded as an entity separate from its owner under Regulation section 301.7701-3 (except for employment and excise tax), do not check the LLC box unless the owner of the LLC (required to be identified on the “Name” line) is another LLC that is not disregarded for federal tax purposes. If the LLC is disregarded as an entity separate from its owner, enter the appropriate tax classification of the owner identified on the “Name” line.

Other entities. Enter your business name as shown on required federal tax documents on the "Name" line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the "Business name/disregarded entity name" line.

Exempt Payee

If you are exempt from backup withholding, enter your name as described above and check the appropriate box for your status, then check the "Exempt payee" box in the line following the "Business name/disregarded entity name," sign and date the form.

Generally, individuals (including sole proprietors) are not exempt from backup withholding. Corporations are exempt from backup withholding for certain payments, such as interest and dividends.

Note. If you are exempt from backup withholding, you should still complete this form to avoid possible erroneous backup withholding.

The following payees are exempt from backup withholding:

1. An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2),
 2. The United States or any of its agencies or instrumentalities,
 3. A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities,
 4. A foreign government or any of its political subdivisions, agencies, or instrumentalities, or
 5. An international organization or any of its agencies or instrumentalities.
- Other payees that may be exempt from backup withholding include:
6. A corporation,
 7. A foreign central bank of issue,
 8. A dealer in securities or commodities required to register in the United States, the District of Columbia, or a possession of the United States,
 9. A futures commission merchant registered with the Commodity Futures Trading Commission,
 10. A real estate investment trust,
 11. An entity registered at all times during the tax year under the Investment Company Act of 1940,
 12. A common trust fund operated by a bank under section 584(a),
 13. A financial institution,
 14. A middleman known in the investment community as a nominee or custodian, or
 15. A trust exempt from tax under section 664 or described in section 4947.

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 15.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 9
Broker transactions	Exempt payees 1 through 5 and 7 through 13. Also, C corporations.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 5
Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 7 ²

¹ See Form 1099-MISC, Miscellaneous Income, and its instructions.

² However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney, and payments for services paid by a federal executive agency.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on page 2), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local Social Security Administration office or get this form online at www.ssa.gov. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at www.irs.gov/businesses and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting IRS.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note. Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded domestic entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, below, and items 4 and 5 on page 4 indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on the "Name" line must sign. Exempt payees, see *Exempt Payee* on page 3.

Signature requirements. Complete the certification as indicated in items 1 through 3, below, and items 4 and 5 on page 4.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account ¹
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor ²
4. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee ¹ The actual owner ¹
5. Sole proprietorship or disregarded entity owned by an individual	The owner ³
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulation section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	Give name and EIN of:
7. Disregarded entity not owned by an individual	The owner
8. A valid trust, estate, or pension trust	Legal entity ⁴
9. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
10. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC	The partnership
12. A broker or registered nominee	The broker or nominee
13. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
14. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulation section 1.671-4(b)(2)(i)(B))	The trust

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name and you may also enter your business or "DBA" name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴ List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 1.

*Note. Grantor also must provide a Form W-9 to trustee of trust.

Note. If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, social security number (SSN), or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes.

Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to phishing@irs.gov. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: spam@uce.gov or contact them at www.ftc.gov/idtheft or 1-877-IDTHEFT (1-877-438-4338).

Visit IRS.gov to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

SUPPLEMENT TWO

REQUIREMENTS

Supporting Document - Complete this column if additional documentation, such as technical specifications have been provided. The column should include section, page and paragraph numbers of the document(s) provided.

Proposal Reference Location - Complete this column with the section, page, and paragraph numbers of the proposal that states how the offeror’s solution will meet the requirement. If this field is left blank, the evaluation team has the right to assume that the requirement cannot be met.

It is anticipated that Offerors may wish to provide explanations to accompany their responses in the requirements table. A column is provided (Comments) in the table to indicate where in the proposal response the accompanying explanation can be found.

1. FUNCTIONAL REQUIREMENTS	SUPPORTING DOCUMENT	PROPOSAL LOCATION	COMMENT
1.1. The system shall only generate nine character student identifiers with the first two characters being alpha and the next seven being numeric.			
1.2. The system shall have the ability to receive, integrate, retain, and continue to utilize the approximately four million student identifiers assigned or otherwise used by the prior system.			
1.3. The system shall not replace, eliminate, or alter the approximately four million student identifiers that have been assigned or otherwise used by the prior system.			
1.4. The system shall not use social security number as a mandatory student attribute.			
1.5. For certain student attributes, the system shall ensure that only Acceptable Student Attribute Codes provided by ODE are accepted by the system.			
1.6. The system shall have the capacity to adhere to and be compatible with industry standard single or reduced sign-on solutions.			
1.7. The system shall meet measures agreed upon in the Service Level Agreement (SLA).			
1.8. The system shall meet the security requirements referenced in the RFP.			
1.9. The system shall be intuitive and require minimal training to use.			
1.10. The system shall represent the vendor’s most modern system available.			
1.11. The system shall utilize an architecture that ensures minimal hardware, software, and system requirements for users.			

SUPPLEMENT TWO

1. FUNCTIONAL REQUIREMENTS	SUPPORTING DOCUMENT	PROPOSAL LOCATION	COMMENT
1.12. The system shall seek to eliminate the creation of duplicate student identifiers.			
1.13. The system shall enable automated processing so that the web-interface will only be needed on rare occasions when direct human involvement is absolutely necessary.			
1.14. The system shall assist in eliminating manual input wherever possible.			
1.15. The system shall not use a poor matching algorithm that would result in too many potential matches, thus making manual intervention necessary.			
1.16. The system shall be configurable to enable or disable functionality to meet client-specific requirements.			
1.17. The system shall provide at least six configurable user access roles.			
1.18. The system shall ensure that only authorized users can access the system or data.			
1.18.1. The system shall provide configurable user access roles so that specific access and functionality privileges can be assigned to specific roles.			
1.19. The system shall provide two data input methods:			
1.19.1. A web-interface where users can manually enter data and upload batch files.			
1.19.2. Integration with ODE's existing Student Locator Framework (SLF) infrastructure.			
1.20. The system shall provide two data retrieval methods:			
1.20.1. A web-interface where users can view data and download batch files.			
1.20.2. Integration with ODE's existing SLF infrastructure.			
1.21. <u>Basic Requirements that are common across ALL data input/output methods</u>			
1.21.1. The system shall have the ability to receive, store, and utilize:			
1.21.1.1. Student identifiers.			
1.21.1.2. Student attributes.			
1.21.1.2.1. The system shall have the ability to accept and utilize up to fifteen student attributes chosen by the Ohio Department of Education.			

SUPPLEMENT TWO

1. FUNCTIONAL REQUIREMENTS	SUPPORTING DOCUMENT	PROPOSAL LOCATION	COMMENT
1.21.1.2.1.1. The system shall have the ability to restrict the values for certain student attributes to only the Acceptable Student Attribute Codes provided by the Ohio Department of Education (see Section 2).			
1.21.1.2.1.2. The system shall have the ability to implement data input validation rules chosen by the Ohio Department of Education.			
1.21.1.2.2. The system shall be able to accept and utilize both required and optional attributes.			
1.21.1.2.3. The system shall allow attributes to be added and removed if requirements change over time.			
1.21.1.2.4. The system shall allow attributes to be changed from required to optional, and from optional to required, if requirements change over time.			
1.21.1.2.5. The system shall have the ability to allow users to input student attributes.			
1.21.1.2.6. The system shall have the ability to set specific combinations of student attributes that must be entered to accomplish tasks within the system (e.g. 'retrieve a student identifier' shall require five specific attributes; 'generate a new student identifier' shall require nine specific attributes).			
1.21.1.2.6.1. The system shall have the ability to configure the sets of specific combinations of student attributes that must be entered to accomplish tasks within the system so that specific user groups shall have different combinations of attributes that must be entered (e.g. 'generate a new student identifier' shall require nine specific attributes from user group A while only five specific attributes from user group B).			

SUPPLEMENT TWO

1. FUNCTIONAL REQUIREMENTS	SUPPORTING DOCUMENT	PROPOSAL LOCATION	COMMENT
1.21.2. The system shall have the ability to connect the student attributes for a student to the student identifier assigned to that student.			
1.21.3. The system shall have to ability to identify every student identifier ever used in any way, by any existing or former student identifier management system utilized by ODE.			
1.21.4. The system shall have the ability to generate and assign new student identifiers.			
1.21.4.1. The system shall ensure that the student identifier the system generates has never been used in any way by any existing or former student identifier management system utilized by ODE.			
1.21.4.2. The system shall never assign the same student identifier to multiple students.			
1.21.4.3. The system shall only assign one student identifier per student.			
1.21.4.4. The system shall generate student identifiers that have no relationship to a student's attributes or personal information and are not sequential.			
1.21.4.5. The system shall generate student identifiers using industry best practices.			
1.21.4.6. The system shall have the ability to allow users to request new student identifiers.			
1.21.4.7. The system shall have the ability to provide student identifiers to users.			
1.21.4.8. When a new student identifier is requested by a user, the system shall first search for records that potentially match the student attributes entered by the user and present the list of potential matches to the user.			
1.21.4.9. If a user decides not to select an existing potential match and instead chooses to create new student identifier, the system shall have the ability to make the user confirm the user's decision to skip potential matches.			
1.21.4.10. When a new student identifier is created, the system shall store the student attributes and student identifier.			

SUPPLEMENT TWO

1. FUNCTIONAL REQUIREMENTS	SUPPORTING DOCUMENT	PROPOSAL LOCATION	COMMENT
1.21.4.11. The system shall have the ability to inform users when a new student identifier has not been issued and explain why.			
1.21.5. The system shall have the ability to compare incoming student data to the existing student data in the system to determine whether matches exist.			
1.21.5.1. When the user provides the system with the student attributes and a student identifier, the system shall have the ability to inform the user whether the data input by the user matches what is in the system and whether the student identifier is active.			
1.21.5.1.1. In situations where there are multiple student identifiers, the system shall have the ability to return the active student identifier for the data input by the user.			
1.21.5.2. When the user provides the system with the student attributes, but not a student identifier, the system shall check for matching records before generating a new student identifier.			
1.21.5.2.1. The system shall use a matching algorithm that follows industry best practices.			
1.21.5.2.2. The system shall provide the user with one of three results: no match, a match, or potential matches.			
1.21.5.2.3. The system shall have configurable matching thresholds for no matches, matches, and potential matches.			
1.21.6. While considering all applicable restrictions on what data can be provided to users, the system shall have the ability to allow users to review and resolve potential matches.			
1.21.6.1. The system shall make it as easy as possible for users to resolve potential matches by providing the information entered by the user, what information exists for the potential match(es), and by clearly identifying differences.			
1.21.7. The system shall have the ability to allow authorized users to perform student identifier maintenance activities.			

SUPPLEMENT TWO

1. FUNCTIONAL REQUIREMENTS	SUPPORTING DOCUMENT	PROPOSAL LOCATION	COMMENT
1.21.7.1. The system shall ensure that only authorized users can complete student identifier maintenance activities.			
1.21.7.2. The system shall ensure that the completion of student identifier maintenance activities does not result in data being deleted.			
1.21.7.3. The system shall ensure that student identifiers cannot be modified.			
1.21.7.4. The system shall have the ability to allow authorized users to modify student attributes for student records that exist within the system.			
1.21.7.4.1. The system shall ensure that modification of a student identifier record does not create a duplicate student identifier.			
1.21.7.5. The system shall have the ability to enable authorized users to search for, monitor, and resolve duplicate student identifier issues (i.e. one student having multiple student identifiers).			
1.21.7.5.1. The system shall have the ability to ensure that authorized users can only deactivate a student identifier that is believed to be incorrect when the user enters the student identifier the user believes to be correct for the student.			
1.21.7.5.2. The system shall have the ability to notify and include all applicable users in the duplicate student identifier resolution process to ensure users are not performing activities that that cause problems for other users.			
1.21.7.5.3. The system shall have the ability to require that authorized users trying to deactivate a student identifier must provide a meaningful reason for the deactivation.			
1.21.7.5.4. When an authorized user is viewing a deactivated student identifier, the system shall have the ability to display the user information (e.g. user name, district, time stamp) of the user who deactivated the student identifier.			

SUPPLEMENT TWO

1. FUNCTIONAL REQUIREMENTS	SUPPORTING DOCUMENT	PROPOSAL LOCATION	COMMENT
1.21.7.5.5. The system shall have the ability to require ODE approval before a deactivated student identifier can be reactivated.			
1.21.8. The system shall have the ability to store audit information to track the creation of new student identifiers and the modification or deactivation of existing student records.			
1.21.8.1. The system shall have the ability to identify situations where users forced the system to create a new student identifier instead of using one of the matches presented to them.			
1.21.8.1.1. The system shall have the ability to capture audit information and metrics about users who force the system to create a new student identifier instead of using one of the matches presented to them.			
1.21.8.1.2. The system shall have the ability to remove or limit system access for users who force the system to create a new student identifier instead of using one of the matches presented to them.			
1.21.8.2. The system shall have the ability to identify and capture audit information and metrics about users whose activities are deemed inappropriate by the Contractor or ODE.			
1.21.8.2.1. They system shall have the ability to remove or limit system access for users who's activities are deemed inappropriate.			
1.21.9. The system shall adhere to industry best practices for data input validation.			
1.22. Web-Interface			
1.22.1. The system shall have the ability to allow authorized users to request new and existing student identifiers, and perform student identifier maintenance through a secure interactive web-interface.			
1.22.1.1. While considering all applicable restrictions on what data can be provided to users, the system shall have the ability to allow users to review and resolve potential matches on screen.			

SUPPLEMENT TWO

1. FUNCTIONAL REQUIREMENTS	SUPPORTING DOCUMENT	PROPOSAL LOCATION	COMMENT
1.22.1.2. Once an existing record has been identified, the system shall have the ability to make the student attributes modifiable to authorized users.			
1.22.2. The system shall prompt the user to confirm operations such as those that create new identifiers or in any way change existing identifiers.			
1.22.3. The system shall use messages that direct positive action, such as directing a user how to enter data properly instead of simply notifying a user that data was entered incorrectly.			
1.22.4. The system shall provide on-line help for all functions			
1.22.5. The system shall provide on-line help for all fields, including all edit rules the field must pass in order to be considered valid.			
1.22.6. The system shall use consistent color and formatting scheme throughout.			
1.22.7. The system shall make non-modifiable fields visually distinguishable (e.g. color/formatting scheme) from modifiable fields.			
1.23. SLF* Transactions			
1.23.1. The system shall have the ability to allow authorized users to request new and existing student identifiers, and perform student identifier maintenance through SLF transactions with the user's Student Information System.			
1.23.2. The system shall have the ability to provide data back to users, including the results of the actions taken by the system; through SLF transactions with the user's Student Information System.			
1.24. Active Student Identifiers File			
1.24.1. While considering all applicable restrictions on what data can be provided to ODE, the system shall have the ability to provide ODE with a file, at least once per day, that includes all active student identifiers, and any applicable student attributes or audit data requested by ODE.			

SUPPLEMENT TWO

1. FUNCTIONAL REQUIREMENTS	SUPPORTING DOCUMENT	PROPOSAL LOCATION	COMMENT
1.24.2. While considering all applicable restrictions on what data can be provided to ODE, the system shall have the ability to provide ODE with a file, multiple times per day, that includes all additions to and deletions from the active student identifiers list, and any applicable student attributes or audit data requested by ODE.			
1.25. Deactivated Student Identifiers File			
1.25.1. While considering all applicable restrictions on what data can be provided to ODE, the system shall have the ability to provide ODE with a file, at least once per day, that includes all deactivated student identifiers, and any applicable student attributes or audit data requested by ODE.			
1.26. The web browsers needed to access the system shall be commonly available recent versions.			
1.27. The system shall only be accessible from the web through a secured Secure Sockets Layer (SSL) encrypted website.			
1.28. The system shall generate well-defined and meaningful informational and error messages that follow industry best practices.			
1.29. The system shall utilize well-defined user prompts that follow industry best practices.			
1.30. Design Scalability - the system shall provide field lengths that could be expanded if needed.			
1.31. Administrative Scalability - the system shall provide administrative scalability so that an increasing number of users can easily share the system.			
1.32. Load Scalability - the system shall provide load scalability so that the system can accommodate heavier loads during peak times and increasingly heavier loads over time.			
1.33. Functional scalability - the system shall provide functional scalability so that new functionality could be added with minimal effort.			
1.34. Automation scalability - the system shall provide automation scalability so that human involvement can be reduced over time as processes are refined.			

SUPPLEMENT TWO

2. Samples

- A. Sample of Acceptable Student Attribute Codes provided by ODE to the existing Contractor for use by the existing system.

1) Summative Race/Ethnicity

Summative Race/Ethnicity ID	Description
W	White, Non-Hispanic: Persons having origins in any of the original peoples of Europe, North Africa, or the Middle East.

2) Native Language

Native Language ID	Description
ENG	English

3) Admission Reason Code

Reason ID	Description
1	Student transferred from Home School in Ohio.

4) District and Building IRN

District IRN	Building IRN	Description
000000	000000	The state assigned six-digit information retrieval number (IRN) of the district and building.

- B. Sample of Student Attributes users input into the current system.

Student Attributes	Classification of Attributes
Student identifier	Mandatory to Modify or Delete student identifiers
Legal First Name	Mandatory for student identifier assignment
Legal Last Name	Mandatory for student identifier assignment
Date of Birth	Mandatory for student identifier assignment
Gender	Mandatory for student identifier assignment
Legal Middle Name	Mandatory for student identifier assignment
Birth Place City	Mandatory for student identifier assignment
Summative Race/Ethnicity	Mandatory for student identifier assignment
Native Language	Mandatory for student identifier assignment
Admission Reason Code	Mandatory for student identifier assignment
Social Security Number	Optional for student identifier assignment
Mother's Maiden Name	Optional for student identifier assignment
Polio Immunization Date	Optional Other student information
MMR Immunization Date	Optional Other student information
DTaP Immunization Date	Optional Other student information
IRN Current Building	Optional Other student information
IRN Current District	Optional Other student information
IRN Previous District	Optional Other student information
IRN Original District	Optional Other student information

SUPPLEMENT TWO

Student Attributes	Classification of Attributes
Birth Place Zip	Optional Other student information
Called Name	Optional Other student information
Given Name	Optional Other student information
Mother's First Name	Optional Other student information
Mother's Last Name	Optional Other student information
Father's First Name	Optional Other student information
Father's Last Name	Optional Other student information
Street Number	Optional Other student information
Street Apartment Character	Optional Other student information
Street Name	Optional Other student information
Street Type	Optional Other student information
Full Address1	Optional Other student information
Full Address2	Optional Other student information
City	Optional Other student information
State	Optional Other student information
Zip Code	Optional Other student information
County	Optional Other student information
Country	Optional Other student information
Home Phone	Optional Other student information
Other Phone	Optional Other student information

C. Sample of some of the Audit Information that would be helpful to ODE.

Date / Time of action/change
Old/Previous Values
New Values
Batch Job ID; blank if change made online
User ID
District IRN of the user
Change Type Code (e.g. creation, modification, deactivation, etc.)
Flag that indicates whether the transaction was through the SLF

D. Sample batch input and output file layout for consideration.

The layout of the Batch Input and Output files must match

The Batch Input/Output files shall:

- Follow a single standard format (e.g. txt, TAB, csv, xml, etc.).
- Include a single standard way for the system and users to differentiate between files (e.g. unique file names, headers with unique information, etc.).
- Have the following minimum elements*:

Field	Note
UserID	
DateTimeCreated	Example "02/13/2002 04:18:31"
Building_IRN	Example "000001"
District_IRN	Example "000001"
Student Identifier	Example "AA#####"

SUPPLEMENT TWO

Field	Note
Student Attribute # 1	
Student Attribute # 2	
Student Attribute # 3	
Student Attribute # 4	
Student Attribute # 5	
Student Attribute # 6	
Student Attribute # 7	
Student Attribute # 8	
Student Attribute # 9	
Student Attribute # 10	
Student Attribute # 11	
Student Attribute # 12	
Student Attribute # 13	
Student Attribute # 14	
Student Attribute # 15	
User Defined Field	A field for users to enter information that is meaningful to them (e.g. a unique number building code, a Student Information System ID, a code that triggers a 'process' at the users education entity, etc.)
Result Code	<i>[*Not included on the input file, only included on the output file*]</i> A code that represents the results of the batch processing (e.g. a Student ID was created, modified, etc.)

* Assumes the number of student attributes used by the new system will be fewer than used by the current system.

SUPPLEMENT THREE

SERVICE LEVEL REQUIREMENTS AND LIQUIDATED DAMAGES

Service Level Requirements and Liquidated Damages

The State, in its sole discretion, may assess the following liquidated damages if the Contractor fails to perform at the stated service levels.

Service Level Requirements (SLRs)

The following minimum service levels are required for the duration of the contract period. Contractor must consistently meet or exceed the following SLRs.

Hours - All times referenced are in Eastern Time

- Normal business hours are 8:00 am to 5:00 pm, Monday through Friday.
- Normal production system availability hours are 7:00 am to 6:00 pm, Monday through Friday.
- Normal training and test system availability hours are 6:00 am to 7:00 pm, Monday through Friday.

Implementation Deadline

The Contractor must ensure that the system is implemented by the date specified in the RFP. If the Contractor fails to meet the required date, the State may assess liquidated damages as follows:

- a. \$1,000.00 per business day, or any part thereof, for each of the first ten business days;
- b. \$2,000.00 per calendar day, or any part thereof, for each of the next 30 calendar days; and
- c. \$3,000.00 per calendar day, or any part thereof, for each additional day.

SUPPLEMENT THREE

SERVICE LEVEL REQUIREMENTS AND LIQUIDATED DAMAGES

SYSTEM AVAILABILITY

DEFINITION	System Availability is defined as the Applications, Server CPU, System memory, disks and peripherals and network that support the system. Availability means the ability of the system to accept all transactions and access to all functions by all users. This excludes scheduled maintenance.
PRE-SCHEDULED DOWNTIME REQUIREMENTS	<p>All pre-scheduled system downtime will:</p> <ol style="list-style-type: none"> a. Be based on agreed upon schedules between the State and the Contractor. b. Pre-scheduled maintenance will be performed outside of the normal system availability time frame. c. The State will have the right to assess Liquidated Damages, as defined in this Contract, for the Contractor’s failure to meet Minimum Service Level attainment.

System	Service Measure	Performance Target	Expected SLR Performance %
Production Systems and Servers	Availability per System	Normal production system availability hours noted above	99.5%
Training & Test Systems supporting contract activities	Availability per System	Normal training and test system availability hours noted above	98%
Liquidated Damages	Formula	Availability (%) = 100% – Unavailability (%) Where Unavailability is defined as: (Total Outage Duration x 100%) ÷ (Schedule Time – Planned Outage)	
	Measurement Interval	Measure Monthly with details for each day noted above; Report Monthly. Application availability metrics will be measured/reported monthly beginning upon successful implementation.	
	Measurement Tool	Defined by Contractor	
		\$1,000.00 per percentage point below the requirement, per month.	

SUPPLEMENT THREE

SERVICE LEVEL REQUIREMENTS AND LIQUIDATED DAMAGES

APPLICATION PLATFORM RESPONSE TIME

DEFINITION	Response time is measured as the elapsed time from when a request enters the system until the request has been satisfied. This timing includes both application and database processing time.
-------------------	---

Application Platform	Service Measure	Performance Target	SLR Performance %
Production Environment	Response Time	95% of transactions complete ≤2.0 seconds 99% of transactions complete ≤5.0 seconds	See performance target
Liquidated Damages	Formula	Count the total number of transactions during the measurement period: TOTAL Count the total number of transactions less than or equal to the applicable threshold as: NBRTXNS Calculate percentage of transactions that meet the threshold: TARGET% TARGET% = NBRTXNS / TOTAL	
	Measurement Interval	Normal business hours. Collected monthly beginning upon implementation, Measure Weekly, Report Monthly.	
	Measurement Tool	Contractor proposed.	
		\$500.00 per percentage point below the requirement, per month.	

SUPPLEMENT THREE

SERVICE LEVEL REQUIREMENTS AND LIQUIDATED DAMAGES

GENERAL ADMINISTRATIVE FUNCTIONS

DEFINITION	Routine functions that are required to meet the State’s requirements.
-------------------	---

General Administration Task	Service Measure	Performance Target	SLR Performance %
Notification of Urgent/High-Priority outage to project representative or designee and Contractor Help Desk	Response Time	10 minutes of discovery (i.e., immediate notification) via phone and/or email	100%
Notification of Medium/Low-Priority outage to project representative or designee and Contractor Help Desk	Response Time	2 hours of discovery via e-mail	100%
Liquidated Damages	Formula	Number of requests or outages completed within Performance Target / Total of all requests (outages) occurring during Measurement Interval	
	Measurement Interval	Measure Weekly; Report Monthly	
	Measurement Tool	Contractor incident tracking system	
		\$500.00 per occurrence.	

SUPPLEMENT THREE

SERVICE LEVEL REQUIREMENTS AND LIQUIDATED DAMAGES

RESOLUTION PRIORITY

DEFINITION	Resolution priority definitions apply to system and customer support incidents.
-------------------	---

PRIORITY LEVEL	DESCRIPTION
Urgent <i>Critical Business Impact</i>	The Incident has caused, or has the potential to cause, the entire system to go down or be unavailable. A complete and immediate work stoppage, affecting a Critical Function or Critical Infrastructure component such that a primary business process or a broad group of Users such as an entire department, floor, branch, line of business, or external customer is affected. No workaround available.
High <i>Major Business Impact</i>	The issue/problem directly affects the public, or a large number of stakeholders are prevented from using the system. High-priority problems include those that render a site unable to function, or key functions of the application are inoperable. Slow processing of data; severely impacts multiple stakeholders. Leads to penalties, financial losses, or corrupt data.
Medium <i>Moderate Business Impact</i>	Medium priority problems include those errors that render minor or non-critical functions of the system to be inoperable or unstable. Incidents that prevent stakeholders or administrators from performing some of their tasks.
Low <i>Minimal Business Impact</i>	All Service requests and other problems that prevent a stakeholder from performing some tasks, but in situations a workaround is available.

Priority Resolution	Service Measure	Performance Target	Expected SLR Performance %
Urgent	Time to Resolve	One (1) Business Day unless an extension is approved by the State	100%
High	Time to Resolve	Two (2) Business Days unless an extension is approved by the State	100%
Medium/Low	Time to Resolve	Thirty (30) business days unless an extension is approved by the State	100%
Liquidated Damages	Measurement Interval	Measure Monthly with details for each day, Report Monthly	
	Measurement Tool	Incident Reporting Tool	
	For Urgent Priority	\$5,000 per day for failure to rectify defects classified as urgent.	
	For High Priority	\$1,000 per day for failure to rectify defects classified as high.	
	For Medium/Low Priority	\$500 per day for failure to rectify defects that are classified as medium or low.	

SUPPLEMENT THREE

SERVICE LEVEL REQUIREMENTS AND LIQUIDATED DAMAGES

BACKUP AND RESTORE

Contractor will implement and maintain backup and restoration capabilities for all data, applications and component configurations. Contractor will perform incremental backups, full backups and full archive backups according to the Backup Schedule presented below. Recovery procedures will be capable of restoring service delivery for failed data, applications and component configurations according to the Services Level Restoration (SLR) listed below.

Type of Backup	Backup Frequency	Storage Site	Retention/Purge Period Standard	Target	SLR Performance %
Incremental	Daily	On Site	7 days	Backup Frequency	99%
Full (Backup)	Weekly	Off Site	5 weeks	Backup Frequency	99%
Full (Archive)	Monthly	Off Site	3 months	Backup Frequency	99%
All				Quarterly Test of each type of Backup/Restore process	99%

Restoration Type	Service Measure	Performance Target	SLR Performance %
Production data that is 1 week old or less.	Response Time	<6 hours from the State's request	100% of the time
Liquidated Damages	Formula	Number of requests completed within Performance Target / Total of all requests occurring during Measurement Interval	
	Measurement Interval	Measure Weekly; Report Monthly	
	Measurement Tool	Contractor Proposed	
		\$5,000.00 per occurrence.	

SUPPLEMENT THREE

SERVICE LEVEL REQUIREMENTS AND LIQUIDATED DAMAGES

BUSINESS CONTINUITY

DEFINITION	Time to recover the application and associated infrastructure after incident.
-------------------	---

BUSINESS CONTINUITY			
Application	Service Measure	Performance Target	SLR Performance %
Student Identifier Management System	Time to recover	3 days / 72hrs or less	100.0%
Liquidated Damages	Formula	Must complete the activity 100% within the expected Measurement interval	
	Measurement Interval	Per incident	
	Measurement Tool	Manual	
		\$10,000.00 per business day, or any part thereof	

SUPPLEMENT THREE

SERVICE LEVEL REQUIREMENTS AND LIQUIDATED DAMAGES

CUSTOMER SUPPORT AVAILABILITY AND ANSWER TIME

DEFINITION	Customer support response time for system users and stakeholders.
-------------------	---

Customer Support Services	Service Measure	Performance Target	SLR Performance %
Customer Support Availability	Customer Support Services	95% availability	95%
Liquidated Damages	Formula	Total time available / total time unavailable and available. * During the measurement interval.	
	Measurement Interval	Monthly The Contractor must be able to provide verifiable proof of meeting this requirement.	
	Measurement Tool	Contractor incident tracking	
	Customer Support Services must be available 95% of the performance target time.	\$1000.00 per month.	

Customer Support Services	Service Measure	Performance Target	SLR Performance %
Answer Time	Customer Support Services	Answer all calls within 30 seconds measured over a calendar month	92%
Liquidated Damages	Formula	Number of calls answered within 30 seconds /Total of all calls. * During the measurement interval.	
	Measurement Interval	Monthly The Contractor must be able to provide verifiable proof of meeting this requirement.	
	Measurement Tool	Contractor incident tracking	
	Answer 92% of all calls within 30 seconds or within 30 seconds of being routed to an IVR holding queue.	\$200.00 per percentage point missed per month.	

SUPPLEMENT THREE

SERVICE LEVEL REQUIREMENTS AND LIQUIDATED DAMAGES

CUSTOMER SUPPORT – MISCELLANEOUS

- The vendor shall handle customer inquiries in a professional manner with timely, accurate and comprehensive resolutions.
- The vendor shall notify ODE of an inability to meet the SLA due to system outages, etc.
- The vendor shall provide support for all aspects of the Contractor's solution.

SUPPLEMENT THREE

SERVICE LEVEL REQUIREMENTS AND LIQUIDATED DAMAGES

DATA FILES

DEFINITION	Transmission and usability of data files.
-------------------	---

Requirement	Service Measure	Performance Target	SLR Performance %
Transmission of Data Files	Daily	Daily transmission of data files	100.0%
Usability	Per File	All files must be usable with no bad or corrupt data that prohibits the State from processing it.	100.0%
Liquidated Damages	Formula	Must complete the activity 100% within the expected Measurement interval	
	Measurement Interval	Per incident	
	Measurement Tool	Manual	
		\$1,000.00 per occurrence	

SUPPLEMENT THREE

SERVICE LEVEL REQUIREMENTS AND LIQUIDATED DAMAGES

REPORTS

DEFINITION	Accuracy and timely delivery of required reports.
-------------------	---

Requirement	Service Measure	Performance Target	SLR Performance %
Reports due multiple times per day	Multiple times per day	As agreed upon by State	100.0%
Daily Reports	Daily	6:00 a.m. for the previous day's activity	100.0%
Weekly Reports	Weekly	6:00 a.m. on Monday's for the previous week's activity	100.0%
Monthly Reports	Monthly	6:00 a.m. on the 3 rd day of the following month	100.0%
Liquidated Damages	Formula	Must complete the activity 100% within the expected Measurement interval	
	Measurement Interval	Per incident	
	Measurement Tool	Manual	
		\$1,000.00 per occurrence	

SIFWorks® Student Locator Framework™

Technical Overview

Version 2.1
May, 2011

The Pearson logo consists of the word "PEARSON" in white, uppercase, sans-serif font, centered within a dark blue rectangular background.

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1. Overview

The SIFWorks® Student Locator Framework – or SLF – was developed in response to a growing demand for student ID management systems based on the Schools Interoperability Framework. SLF is a framework comprised of two SIF Agents and an API for developing adapters to existing products that offer ID management services. Collectively, these components are used to implement real-time, secure, and scalable state-wide ID management solutions that interoperate with existing SIF-enabled student information systems.

The SLF framework handles transporting data over the SIF infrastructure, interacting with district SIS systems, and implementing the StudentLocator message choreography. By developing a SLF adapter module, any student ID management system or SSID Vendor Database can tap into the power of SIF StudentLocator services.

This document provides a high-level technical overview of the Student Locator Framework. It's assumed the reader has a basic understanding of the Schools Interoperability Framework and the SIF 2.x StudentLocator object and message choreography.

Terminology

These terms are used throughout this document:

- **State ID.** A state-managed ID for a student or staff. The goal of a SLF transaction is to obtain or validate a State ID. In SIF, the State ID is encapsulated by the StatePrId element.
- **SSID Vendor Database.** The generic term for the application at the state that's responsible for managing State IDs. The Student Resolver component of SLF interfaces with this application via a plug-in module developed specifically for it.
- **Student Information System (SIS).** The generic term for the application at the district that records student information. The SIS generally triggers an automated, real-time student lookup transaction when a new student is added to the system.
- **State Zone.** The generic term for the SIF Zone that districts connect to when obtaining State IDs. The Student Locator and Student Resolver components of SLF communicate over the state zone.
- **District Zone.** The generic term for the SIF Zone(s) at a district. The Student Locator component of SLF registers in district zones to communicate with the Student Information System.
- **SIF StudentLocator Object.** The SIF specification formally introduces an object and associated message choreography for looking up State IDs over the SIF infra-

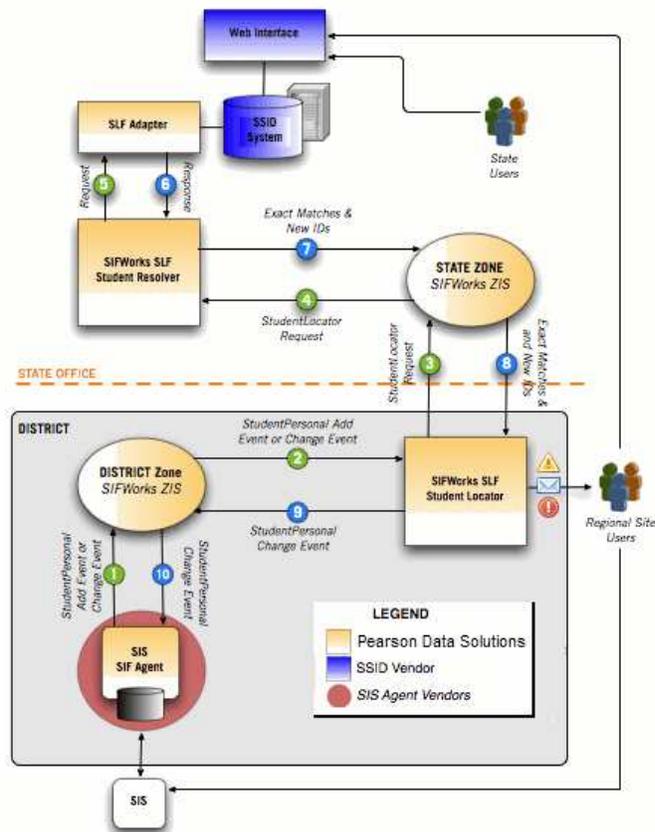
structure. Whenever StudentLocator is shown in a fixed-width font, it refers to this SIF object and sub-specification.

Architectural Components

SLF is comprised of four components:

1. **Student Resolver.** This SIF Agent runs at the state and is responsible for interacting with the SSID Vendor Database to execute student locator requests on behalf of districts.
2. **Student Locator.** This SIF Agent runs at each district and is responsible for interacting with student information systems. When a new student is added at a district, Student Locator sends a request to the Student Resolver agent (running at the state) and starts a new transaction. Student Resolver and Student Locator work together until a resolution is achieved, at which time the Student Locator reports the student's State ID back to the student information system.
3. **SLF adapter.** A plug-in module for Student Locator and Student Resolver that's responsible for interfacing with the state SSID Vendor Database product and for implementing custom workflows, business logic, and transaction handling.
4. **SLF Database.** Both Student Locator and Student Resolver use a database to store transaction state, receipts, e-mail logs, and other information that needs to be persisted.

The following diagram illustrates how these components fit together with the state date warehouse and district SIS system:



Student Resolver Agent

The Student Resolver agent serves as the interface between the state SSID Vendor Database and districts requesting State IDs. It's responsible for handling student lookup transactions submitted by districts over the SIF infrastructure.

When a transaction is received, Student Resolver's SLF adapter interacts with the SSID Vendor Database to resolve the student.

Each transaction can result in a Match, Ambiguous Match, New ID, or Fault, and may involve manual interaction with end-users via web applications, e-mail, client apps, etc. The result of a transaction is returned to the district's Student Locator over the SIF infrastructure.

Student Locator Agent

The Student Locator agent serves as the interface between the district's student information system (or other SIF-enabled applications) and the state ID management solution. It initiates student lookup transactions in real-time by subscribing to SIF Events reported by the SIS system. Transactions can also be performed individually or in batches at the direction of district staff. When a transaction results in a State ID, Student Locator updates the student information system by reporting a SIF StudentPersonal Change event. The SIS must be configured to subscribe to these events and update its State ID in response.

Student Locator's SLF adapter is responsible for implementing any custom workflow needed to handle Ambiguous Match and Fault conditions. For example, when a transaction results in an Ambiguous Match, the adapter can be written to send an e-mail message to district staff with instructions for resolving it via the state web application.

If both student and staff are supported, Student Locator must load two adapters: one to handle transactions for students, and one to handle transactions for staff. These adapters can implement workflow and business rules differently so that e-mail notifications and other actions can be performed based on object type. A single adapter cannot be used for both object types.

SLF Adapter

An SLF adapter is a suite of Java classes written against the SLF API to connect the framework to a specific SSID Vendor Database product. Data Solutions develops adapters in conjunction with its partners. Variations in adapters may be created to meet the unique requirements of a statewide student ID management solution.

In general, the Student Locator Framework handles all SIF messaging with both state and district zones, and is responsible for implementing the SIF 2.x StudentLocator message choreography. It also manages transactions and interaction with the SLF Database. These tasks are common to all implementations.

Adapters, on the other hand, are responsible for providing functionality that's unique to a specific SSID Vendor Database product or solution. In particular, all non-SIF tasks are in the domain of the adapter (and perhaps external software such as a web interface to the data warehousing application.)

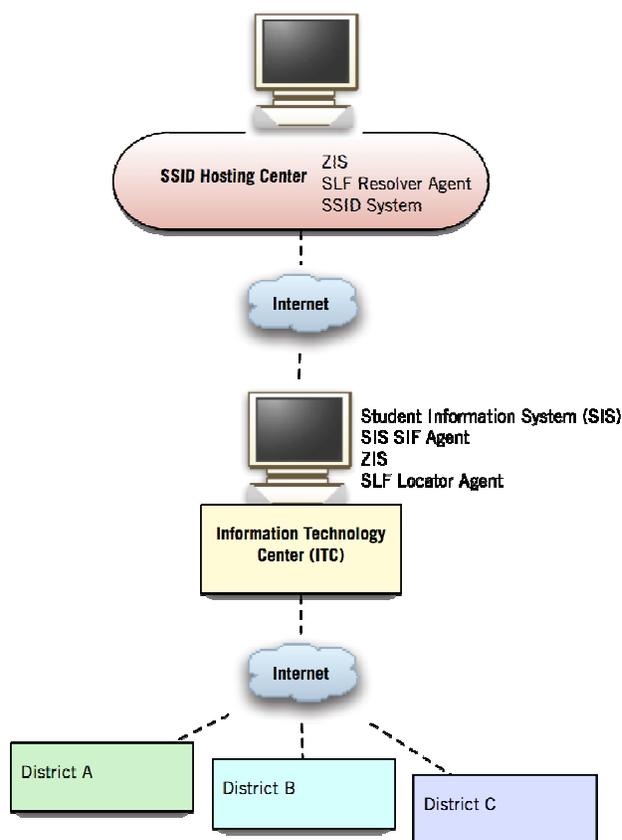
The next chapter describes the functionality of the adapter, which can be used as the basis for custom implementations.

SLF Database

The Student Resolver and Student Locator agents require a relational database in order to record transaction state. For the Student Resolver component, this database can be independent or combined with the SSID Vendor Database product at the discretion of the vendor. Several databases are supported, including Oracle, SQL Server, and Postgres. (Postgres may also be installed for non-Windows clients.)

SLF Zone Topology

The SLF Zone Topology diagram (Figure 1-1) shows how the two pieces of the Student Locator Framework (the SLF Resolver Agent and the SLF Locator Agent) connect to the SSID Hosting Center and ITCs. Districts do not connect directly to either agent, but they initiate the process by logging into their Student Information System (SIS), which is hosted at the ITC, via a secure connection. The SLF Locator Agent is hosted at the ITCs, and the SLF Resolver Agent is hosted at the state-level SSID Hosting Center. Districts can log into the SSID System manually to resolve multiple near-matches, which is described later in this document.



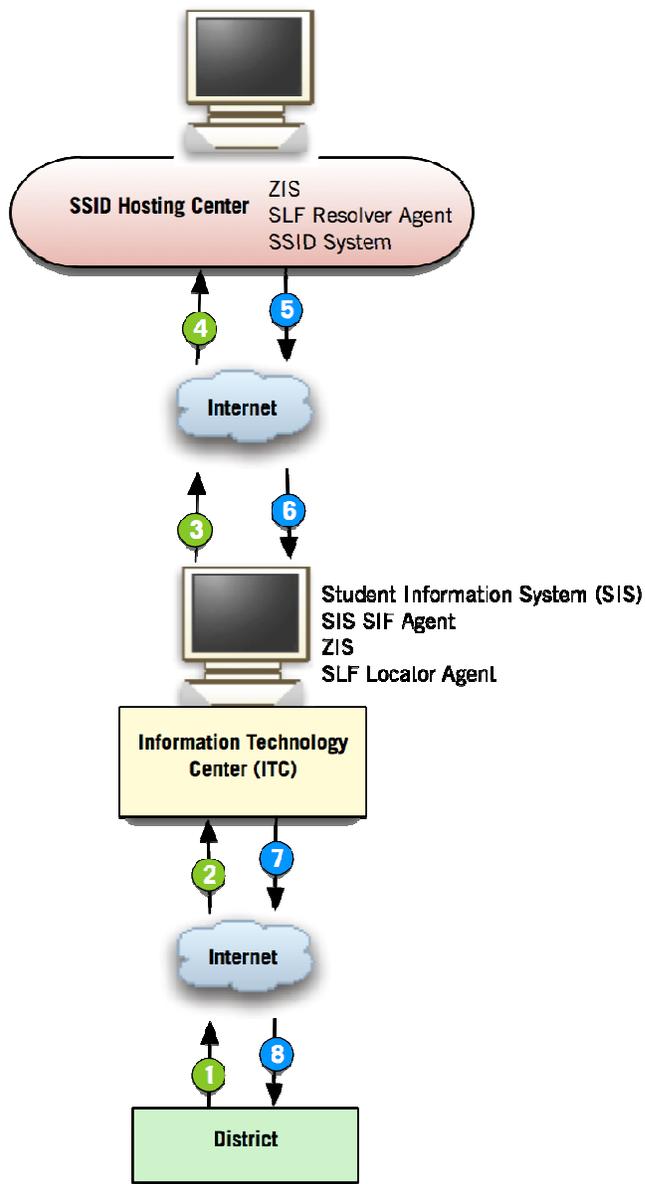
(Figure 1-1)

As the SLF zone topology diagram (Figure 1-1) shows, the Student Resolver Agent resides at the SSID Hosting Center. The Student Locator Agent resides at the ITC. There is no direct access to the Student Locator Agent for districts; only ITCs have access to this agent’s user interface. There is also no direct contact between districts or ITCs and the Student Resolver Agent. Information simply passes through Student Locator up to the Hosting Site’s Student Resolver Agent.

Please see the next section for a more detailed description of how information is exchanged within the SLF, and which parts of it govern which pieces of information.

How Information Is Exchanged

Here is the SLF diagram again, this time with a district example to show the information exchange process. This diagram has arrows to show the flow of information and has numbered circles to show the steps in the process. For example, the green circle labeled “1” represents the first step of the information exchange where the district enters a new student (add event) or changes information about a student (change event) in the SIS.



(Figure 1-2)

Step 1: District Logs into User Interface to Access SIS

Via a secure internet connection, users at the district level can access their SIS, which resides at their ITC.

Step 2: District Adds a New Student (Add Event) or Updates Student Information (Change Event) in Required Fields

In the SIS, district level users can add a new student. When any of the nine required fields are added, it automatically creates an add event (but all nine required fields must be completed before the event can process successfully). District level users can also change information for an existing student. If they change information in any of the nine required fields, a change event is generated automatically, and the change event is sent through the SIS SIF agent, through the Zone Integration Server (ZIS), to the SLF Locator Agent (see Step 3). The required fields are: FirstName, LastName, Date of Birth (DoB in MSSQL column), Gender, AdmissionReasonID, NativeLanguageID, EthnicityID, BirthPlaceCity, and MiddleName.

If information is entered or changed in a non-required field, a change event is *not* automatically generated. The information will be entered in the SSID System the next time a required field is changed and a change event is generated, but a change to a non-required field does not generate a change event.

For information on what happens if the required fields are incomplete or incorrect, please see the section on [Errors and Near Matches](#).

Step 3: SLF Locator Agent Starts a Transaction

At the ITC level, after information has been added to or changed in the SIS, the add event or change event enters the SIS SIF Agent, which passes the event through the Zone Integration Server (ZIS) to the SLF Locator Agent. The SLF Locator Agent takes the information in the add event or change event and creates a transaction (in SIF, known as a Student Locator Object Request). It is this transaction, (Student Locator Object Request) which is sent to the Student Resolver Agent at the SSID Hosting Center. The actual add or change event created by the Student Locator Agent at the ITC remains at the Student Locator Agent.

Step 4: Transaction Is Passed Over the Internet Via a Secure Connection to SSID Hosting Center

The SLF Locator Agent at the ITC sends the transaction over the internet to the SSID Hosting Center via a secure connection. There, the transaction passes through the SSID Hosting Center's ZIS to the SLF Resolver Agent. The SLF Resolver Agent then sends the transaction to the SSID System.

Step 5: SSID Hosting Center Issues Unique State ID

For a new student, if the required fields are complete, and if the transaction is without errors, then the SSID System issues a unique state-level ID. For an existing student whose information is being changed, the SSID System returns that student's existing unique state-level ID. This ID passes from the SSID System to the SLF Resolver Agent. Note: If the following fields are incomplete or incorrect, an error will result: FirstName, LastName, Date of Birth (DoB in MSSQL column), Gender, Admission-

ReasonID, NativeLanguageID, EthnicityID, BirthPlaceCity, and MiddleName. See the [Errors and Near Matches](#) section.

Step 6: Unique State ID Is Transmitted Via a Secure Connection over Internet to ITC

The SLF Resolver Agent passes the ID through the SSID Hosting Center's ZIS. From the ZIS, the ID passes over the internet via a secure connection to the SLF Locator Agent at the ITC.

Step 7: SLF Locator Agent Receives Unique State ID and Issues a Change Event

At the ITC, the SLF Locator Agent receives the unique state ID and issues a change event. Please note that this *is not* the same change event, or add event, that was originally sent up to the SLF Locator Agent (see Steps 2 and 3). When the SLF Locator Agent receives the unique state ID that the SSID Hosting Center returned in response to the SLF Locator Agent's transaction (Student Locator Object Request), the SLF Locator Agent issues a new change event to pass the unique state ID through to the SIS SIF Agent.

Step 8: Change Event Is Returned to SIS

The SIS SIF Agent returns the change event to the SIS, where it is automatically entered. The district receives a notification email only if there were errors or near matches. As long as the process completes successfully, no notification is sent.

State Zone

The State Zone is the zone that Student Locator and Student Resolver use to communicate with one another. Student Resolver, which is installed at the state level, connects to a single state zone to service SIF Requests received from districts. The Student Locator agent, which is installed at each district, connects to **both** the local district zones as well as the State Zone.

It's worth noting that one benefit of this arrangement is that states do not have to manage district zones, which greatly improves scalability and manageability. Districts are simply given the URL to the state zone where that district's Student Locator agent connects.

Communication over the state zone is typically secure HTTPS in Pull mode.

District Zones & School Zones

This document refers to the zones that exist at a district as "district zones", even as they may represent the data from the entire district, individual schools, or an aggregation of schools. The Student Locator agent can connect to multiple zones and can determine where to send messages based on the school associated with the data.

Communication over the district zone is typically HTTP over Push mode as it occurs within the district LAN.

District zones may already exist for horizontal integration. SLF does not require districts to establish local zones for the express purpose of conducting Student Locator services with the state.

Transactions

In SLF, a transaction encapsulates a request from a district for a State ID for a single student. Although transactions may be grouped together into batches, a single transaction encapsulates one and only one student. Transactions are asynchronous, are initiated at the district level by Student Locator, and may involve manual intervention by district staff before considered complete.

Transactions are identified by a unique **Transaction ID**. This ID is a 32-character globally unique identifier (GUID) assigned by Student Locator at the time a transaction begins. It identifies the transaction at both the district and state and does not change over time. All components involved in a transaction must internally reference it by its Transaction ID.

Transactions always begin and end with the Student Locator agent. Specifically, a transaction begins when Student Locator issues a SIF_Request for a StudentLocator object to the state zone. This usually happens as the result of a New Student (or New Staff) event received from the district SIS system or an individual or batch of transactions initiated by Student Locator. A Change Student event may also trigger a transaction – for example, if the SIS administrator has filled-in missing student data from a previously failed transaction.

A transaction ends when Student Locator receives a response from Student Resolver with a completion state.

Completion

A transaction can complete in one of four ways:

1. **Match.** A matching student was found given the supplied criteria and a State ID returned to the district. Student Locator sends a Change SIF Event to the district zone to update the student information system and other subscribing applications. No user intervention is required.
2. **Ambiguous.** More than one match was found given the supplied criteria and a list of candidates is returned to the district. District staff resolve the ambiguity outside of the SIF infrastructure (e.g. via a web interface to the SSID Vendor Database). Once resolved, Student Resolver returns the State ID to the district and the SIS system is updated.
3. **New.** The SSID Vendor Database assigned a new State ID to the student. Student Locator sends a Change SIF Event to the district zone to update the student information system and other subscribing applications. No user intervention is required.
4. **Insufficient Data.** The district presented insufficient information in its request. In this case, district staff are notified (e.g. via e-mail) and asked to correct the prob-

lem in the student information system. Upon receipt of a Change Student event from the SIS, Student Locator will retry the lookup as a new transaction.

5. **Fault¹**. If the Student Resolver or SSID Vendor Database application encounters a technical error, it can fail the transaction with an error code and message. Transactions in an error state can be retried from the Student Locator administration console. The SLF adapter may do additional processing on faults, such as notify users or display a message in a web application screen.

Note: Alternatively, the adapter can be implemented to leave the records in the database and instead set the status to COMPLETE(9).

2. Integration

IMPORTANT: This section describes the *SLF Adapter*, which can serve as the starting point for vendors to create custom adapters. Specific implementations will have a separate design document describing the adapter's unique database schema and processing. Please consult that document.

SSID Vendor Database Integration

The SLF adapter uses a relational database as the point of integration between the Student Resolver agent and the SSID Vendor Database application. There are four tables in the baseline adapter:

- SLF_BATCH
- SLF_TRANSACTION_PARMS
- SLF_POTENTIAL_MATCH
- SLF_ERROR_LOG

When Student Resolver begins a new transaction, it adds a record to the SLF_BATCH table or uses an existing row if the transaction is part of a previously established batch. This table associates one or more transactions with a logical batch of transactions. It records the SIF Zone and SIF Agent ID of the requesting district, batch IDs, and optionally other fields that apply to all transactions in the batch (e.g. school year, district code, school code, etc.)

Student Locator transactions are recorded in the SLF_TRANSACTION_PARMS table. Each row refers back to its parent SLF_BATCH transaction. The number of columns in SLF_TRANSACTION_PARMS (e.g. student name, local ID, birth date, gender, and so on) is dependent on the requirements of the SSID Vendor Database application and will change from implementation to implementation.

The SSID Vendor Database periodically polls the SLF_TRANSACTION_PARMS table to process new requests. Some SSID Vendor Databases may trigger new transactions by polling the SLF_BATCH table. When the SSID Vendor Database changes the state of a transaction, the tables are updated and Student Resolver detects the change the next time it polls the database. See the *Transaction Flow* section for an explanation of each state a transaction may go through. If a transaction results in an ambiguous match, the match candidates are recorded in a third table, SLF_POTENTIAL_MATCH. Transactions that result in errors from the SSID Vendor Database are recorded in the SLF_ERROR_LOG table.

The SLF_BATCH table has a Boolean-type READY flag that is set to true (1) when the batch of transactions is ready to be processed. Depending on the Student Resolver adapter implementation, a batch may be ready for processing as soon as one SLF_TRANSACTION_PARMS child record exists, or it may be delayed until a certain number of records exist or a period of time has elapsed (e.g. every 4 hours, 3:30pm each day, etc.) Even when there is a one-to-one relationship between SLF_BATCH and

SLF_TRANSACTION_PARMS records, SSID Vendor Database systems must only process SLF_BATCH rows where the READY flag has a value of 1.

Note these four tables are considered a basis for beginning a new adapter and can be changed or completely redrawn to meet the needs of a specific SSID Vendor Database product or state project. They have been implemented in existing projects, but may not apply to all SSID Vendor Databases and will likely require adjustment.

Database Tables

IMPORTANT: Shaded areas denote database columns that must be present in all adapter implementations based on the SLF adapter. Non-shaded areas are specific to a SSID Vendor Database product. The non-shaded fields in this guide are intended as examples – refer to your SLF adapter documentation for implementation details.

The order of columns presented here does not necessarily match the order of columns in database scripts.

SLF_BATCH

This table records a “batch” for grouping together a set of one or more transactions. Each SLF_TRANSACTION_PARMS record refers back to its parent SLF_BATCH row. (Note a row must exist in this table even if batch-mode processing is not supported.)

Column Name	Type	Description
N_BATCH_ID	Numeric	A unique internal database ID for this record. Generated by the database.
SIF_ZONE_ID	VarChar(50)	The SIF Zone ID where the transaction originated. The results of the transaction will be delivered to this zone. Note it’s necessary to record the Zone ID in the database for the benefit of SSID Vendor Databases that may support more than one state concurrently, or when a single state uses more than one SIF Zone for Student Locator services.
SIF_SOURCE_ID	VarChar(50)	The SIF Source ID of the Student Locator agent where the transaction originated. The results of the transaction will be delivered to this agent in the zone identified by SIF_ZONE_ID.
READY	Numeric(1)	True (1) if this SLF_BATCH row and any references SLF_TRANSACTION_PARMS records can be processed by the SSID Vendor Database; False (0) if the batch of transactions is not yet ready to be processed.
SCHOOL_YR	VarChar(4)	The school year (e.g. “2005” for the 2004-2005 school year). This value applies to all students/staff associated with this transaction.

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Column Name	Type	Description
DISTRICT_CODE	VarChar(8)	The district code. This value applies to all students/staff associated with this transaction.
SCHOOL_CODE	VarChar(8)	The school code. This value applies to all students/staff associated with this transaction.
BATCH_NUM	VarChar(32)	An optional batch number that can be assigned to each transaction by the Student Locator agent. When a new transaction is received, Student Resolver first determines if there exists a SLF_BATCH row with this value. If not, a new row is created.
APP_BATCH_NUM	VarChar(32)	An optional batch number assigned by the SSID Vendor Database application. This field may be updated by the SSID Vendor Database when it establishes a "batch" in its own system, and used to report the batch number back to districts in error messages and ambiguous matches.

SLF_TRANSACTION_PARMS

This table records the input parameters of a Student Lookup transaction for a single student. Each row is tied to one SLF_BATCH record, which ties together a batch of one or more transactions.

Column Name	Type	Description
N_TRANSACTION_PARMS_ID	Numeric	A unique internal database ID for this record. Generated by the database.
N_BATCH_ID	Numeric	The ID of the associated SLF_BATCH record.
SLF_TRANSACTION_GUID	Char[32]	The Transaction GUID
SIF_REFID	Char[32]	The 32-character RefId of the Student-Personal object associated with this transaction.
SIF_REFIDTYPE	Numeric	Identifies the type of object associated with this transaction: 1=StudentPersonal
STATE_ID	VarChar(20)	The current State ID of the student. For students, usually maps to the StudentPersonal/StatePrId element.
LOCAL_ID	VarChar(20)	The current Local ID of the student as defined by the district student information system. For students, usually maps to the StudentPersonal/LocalId element.
HOME_SCHOOL_CODE	VarChar(6)	The ID of the home school where the student is currently enrolled, as defined by SIF's StudentSchoolEnrollment object where the MembershipType attribute is equal to "Home".
LEGAL_FIRST_NAME	VarChar(60)	The legal first name of the student as supplied by the district SIS. In SIF, maps to the StudentPersonal/Name/FirstName element.
LEGAL_LAST_NAME	VarChar(60)	The legal last name of the student as supplied by the district SIS. In SIF, maps to the StudentPersonal/Name/LastName element.
LEGAL_MIDDLE_NAME	VarChar(60)	The optional legal middle name of the student as supplied by the district SIS. In SIF, maps to the StudentPersonal/Name/MiddleName element.
ETHNICITY_CODE	VarChar(4)	The race/ethnicity code as supplied by

Column Name	Type	Description
		the district SIS. In SIF, maps to the @Code attribute of the StudentPersonal/Demographics/Ethnicity element.
GENDER_CODE	VarChar(6)	The gender code as supplied by the district SIS. In SIF, maps to the StudentPersonal/Demographics/Gender element. Possible values: M, F, or U
BIRTH_DATE	VarChar(8)	The birth date of the student as supplied by the district SIS. In SIF, maps to the StudentPersonal/Demographics/BirthDate element. Format: "yyyymmdd"
GRADE_LEVEL	VarChar(2)	The grade level of the student in his or her current home school, as defined by SIF's StudentSchoolEnrollment object where the MembershipType attribute is equal to "Home". Possible Values: { K0,01,02,03,04,05,06,07,08,09,10,11,12 }
N_SLF_STATUS	Numeric	The status of this transaction: 1=REQUEST 2=REQUEST_IN_PROGRESS 3=SYSTEM_MATCH 4=SYSTEM_NEW 5=USER_MATCH 6=USER_NEW 7=UNRESOLVED 8=RESOLUTION_IN_PROGRESS 9=COMPLETE 10=ERROR 11=ERROR_IN_PROGRESS 12=CANCELLED 13=CANCELLED_IN_PROGRESS This field is updated by the SSID Vendor Database when it matches this student or staff, assigns a new ID, determines an ambiguous match or error condition, etc. It is also polled by the Student Resolver to determine when a transaction should be returned to the district.

SLF_POTENTIAL_MATCH

If a transaction results in an ambiguous match, each candidate is recorded in the SLF_POTENTIAL_MATCH table. Student Resolver reads from this table when returning StudentLocator responses to the district.

Column Name	Type	Description
N_POTENTIAL_MATCH_ID	Numeric	A unique internal database ID for this record
N_TRANSACTION_PARMS_ID	Numeric	The ID of the associated SLF_TRANSACTION_PARMS record that resulted in this ambiguous match
N_BATCH_ID	Numeric	The ID of the associated SLF_BATCH record
CONFIDENCE	Double	0.0-1.0
STATE_ID	VarChar(20)	The student State ID
LOCAL_ID	VarChar(20)	The student Local ID
HOME_SCHOOL_CODE	VarChar(6)	The ID of the home school where the student is currently enrolled
LEGAL_FIRST_NAME	VarChar(60)	The legal first name of the student
LEGAL_LAST_NAME	VarChar(60)	The legal last name of the student
LEGAL_MIDDLE_NAME	VarChar(60)	The legal middle name of the student
ETHNICITY_CODE	VarChar(4)	The race/ethnicity code
GENDER_CODE	VarChar(6)	The gender code
BIRTH_DATE	VarChar(8)	The birth date of the student
GRADE_LEVEL	VarChar(2)	The grade level of the student

SLF_ERROR_LOG

This table records an error condition determined by the SSID Vendor Database.

Error	Type	Description
N_ERROR_LOG_ID	Numeric	A unique internal database ID for this record. Generated by the database.
N_TRANSACTION_PARM S_ID	Numeric	The ID of the associated SLF_TRANSACTION_PARAMS record that resulted in this ambiguous match
N_BATCH_ID	Numeric	The ID of the associated SLF_BATCH record
ERROR_DSCR	VarChar(255)	The error message that will be returned to the district as the response to this transaction

Transaction Flow

A SLF transaction begins when one of the following takes place:

- **New Student Added to Zone.** The Student Locator agent determines that a new student or staff has been added to a zone.

Note for students, SIS systems may report “new student” events differently. For example, in some SIS applications the information required to start a transaction is received over the span of several events (e.g. a StudentPersonal Add event followed by a StudentSchoolEnrollment Add event followed by a StudentPersonal Change event). The Student Locator agent offers administrators a choice of how to determine when to initiate a transaction. Refer to *New Student Determination* on page 23 for details.
- **Correction of Previous Transaction.** A StudentPersonal change event is received for a transaction that previously failed because of incomplete or invalid input parameters.
- **Manual.** The administrator initiates an individual transaction, or a batch of transactions, from the Student Locator Console.
- **Manual Retry.** The administrator retries a failed transaction from Student Locator Console.

When a transaction begins at the Student Locator agent, it is recorded in the local SLF database. The transaction now exists at the district but not the state. Student Locator issues a SIF StudentLocator request to the state zone. When Student Resolver receives this request, it delegates it to the appropriate adapter. Student transactions are handled by one adapter, and staff transactions by another. When the adapter has recorded entries in its database, the transaction is considered to have started at the state.

Once a transaction has started, it may take several iterations of messaging between state and district for it to complete. Transactions that result in a new or matched State

ID will complete without any user intervention. Transactions that result in an ambiguous match or an error condition require user interaction. The SLF adapter uses e-mail and the SSID Vendor Database's web interface to resolve ambiguous matches and notify district staff of errors.

The remainder of this section details the various transaction flows and how the SSID Vendor Database and SLF adapter is expected to process each state transition.

New Transaction

1. User adds a new student to the district SIS system. For students, the district SIS reports a StudentPersonal Add event followed by a StudentSchoolEnrollment Add event.
2. Student Locator receives the events and begins the process of collecting data to start a transaction. Depending on the business rules of the specific implementation, Student Locator's adapter may wait for additional events to arrive, or may issue its own SIF Requests to collect additional fields. When all input parameters are ready, a StudentLocator request is sent to the state zone and the transaction is recorded in the local SLF database.
3. Student Resolver receives the StudentLocator request. Its adapter records a new entry in the SLF_TRANSACTION_PARMS database table with the lookup parameters, and also creates a SLF_BATCH if there isn't an existing record with the same batch number. The N_SLF_STATUS column is set to a value of **REQUEST(1)**. The transaction is now considered to have started at both the district and state level.

NOTE: Batch numbers may be passed from Student Locator as part of the SIF_Request or calculated by Student Resolver upon receipt of a request (e.g. all transactions in a given day are part of the same batch).

The SSID Vendor Database polls the SLF_TRANSACTION_PARMS table for records that have a N_SLF_STATUS value equal to **REQUEST(1)**. The SSID Vendor Database immediately changes the status to **REQUEST_IN_PROGRESS(2)** and begins its matching process. Possible outcomes are explained in subsequent sections.

Matched State ID

If a transaction results in an unambiguous match of the State ID, the SSID Vendor Database updates the SLF_TRANSACTION_PARS.STATE_ID field with the State ID and sets the N_SLF_STATUS value to **SYSTEM_MATCH(3)**. Note if a match was made because the transaction previously resulted in an Ambiguous Match and the administrator has manually selected a match from the SSID Vendor Database web application, the value should be set to **USER_MATCH(5)**.

The Student Resolver adapter polls the database and responds to these state changes by sending a StudentLocator response message to the district zone. The SLF_TRANSACTION_PARS record is deleted from the database and the transaction is considered complete at the state¹. If this is the last transaction in the batch, the SLF_BATCH row is also deleted. Student Locator receives the response and reports a StudentPersonal Change event to the district zone. The transaction is considered complete at the district.

New State ID

If a transaction results in the generation of a new State ID, the SSID Vendor Database updates the SLF_TRANSACTION_PARS.STATE_ID field with the State ID and sets the N_SLF_STATUS value to **SYSTEM_NEW(4)**. Note if a new ID was generated because the transaction previously resulted in an Ambiguous Match and the administrator has requested a new ID be assigned from the SSID Vendor Database's web application, the value should be set to **USER_NEW(6)**.

The remainder of processing is identical to Matched Student ID.

Ambiguous Match

If a transaction results in an ambiguous match, the SSID Vendor Database updates the N_SLF_STATUS value to **UNRESOLVED(7)** and records each match candidate in the SLF_POTENTIAL_MATCH table. An optional Confidence level can be assigned to each if the Student Locator adapter is to order match candidates in the e-mail message it sends to district staff.

The Student Resolver adapter responds to this state change by sending a StudentLocator response message to the district zone with the list of match candidates enumerated in that object. To avoid re-processing the transaction, it sets the N_SLF_STATUS value to **RESOLUTION_IN_PROGRESS(8)**. Student Locator receives the response and sends an e-mail message to the appropriate district or school staff. Depending on the implementation of the adapter, the e-mail usually instructs the administrator to visit the SSID Vendor Database's web application to resolve the ambiguity, and includes a URL to that web site. It may also list information about the unresolved student and the match candidates.

The transaction remains in this state until the user manually chooses a match or chooses to create a new ID, at which time the transaction proceeds as described in *Matched Student ID* and *New Student ID* above.

Error Condition

If a transaction results in an error because of incomplete input parameters, a business rule violation, etc., the SSID Vendor Database sets the SLF_STATUS value to **ERROR(10)** and records the error message in the SLF_ERROR_LOG table.

The Student Resolver adapter responds to this state change by sending a StudentLocator response message to the district zone with a SIF_Error payload. The SLF_TRANSACTION_PARMS record is deleted from the database and the transaction is considered complete at the state². If this is the last transaction in the batch, the SLF_BATCH row is also deleted.

Student Locator receives the response and sends an e-mail message to the appropriate district or school staff. Depending on the implementation of the adapter, the e-mail usually instructs the administrator to visit the SIS system and/or the SSID Vendor Database's web application to resolve the error.

Any actions taken to resolve the error will result in a new transaction. If Student Locator receives a StudentPersonal Change event for an object that has a previously failed transaction, it will initiate a new transaction. The input parameters used in the original (failed) transaction are updated with the corrections from the Change event before the StudentLocator request is sent to the state zone.

New Student Determination

Most SLF implementations will require that a minimum set of student fields is present for a successful transaction. For example, the typical ID management solution uses this minimum set:

- District Student ID
- School ID
- Student Name
- Grade Level
- Gender
- Birth Date

In the SIF data model, these values must be obtained from a combination of objects: StudentPersonal (district student ID, name, gender, birth date) and StudentSchoolEnrollment (school ID and grade level). When a new student is added to an SIS application, that action usually results in an Add event reported on the StudentPersonal object, followed by an Add event reported for a StudentSchoolEnrollment.

With some SIS systems there is a delay between these two events: for example, once a student has been entered into the SIS (resulting in a StudentPersonal Add event), the

² Alternatively, the adapter can be implemented to leave the records in the database and instead set the status to COMPLETE(9)

administrator may have to take further action to enroll a student in a school (resulting in a StudentSchoolEnrollment Add event). The SIF Specification does not mandate when these events should occur, in which order they occur, or whether a time gap may exist between them. It is up to each SIS vendor to make that determination.

Sometimes, SIS agents send *most* of the required Student Locator field data in these initial Add events, then follow up with a StudentPersonal Change event once the administrator has finished filling out the student record. This is common with systems like SASIxp™, where administrators enter basic information such as Name and ID in one step, then edit the student record to fill in remaining fields.

Given the need to accommodate these kinds of differences in SIS systems, the Student Locator agent lets administrators choose when to consider a series of “new student” events complete. Only at that time will a StudentLocator transaction be initiated:

1. **On receipt of StudentPersonal & StudentSchoolEnrollment Add events.** In this mode, the StudentLocator transaction is initiated upon receipt of these two Add events. If insufficient data is provided by the events (e.g. a field like Birth Date is absent at this stage), the transaction will ultimately be failed at the state when it is inspected by Student Resolver. In most implementations this would result in an e-mail notification to the district staff with instructions for fixing the problem.
2. **On receipt of StudentPersonal & StudentSchoolEnrollment Add Events, and after the first StudentPersonal Change event is received.** In this mode, which was designed explicitly for Pearson Digital Learning’s SASI™ product, Student Locator waits for a subsequent StudentPersonal Change event before initiating a transaction. This reflects the way SASI generates SIF Events for new students.
3. **On receipt of all required fields.** In this mode, Student Locator does not initiate a transaction until it has *all* of the required fields. It does not matter how many Add and Change events are received, or in what order. While this mode works with the most number of systems, it can be a dangerous choice because it may not be clear to SIS administrators that they have not entered all of the information needed for Student Locator.

Mode 1 is the default recommendation. Mode 2 is recommended for most SASIxp customers.

Collection of Transaction Data

SLF 2.x supports the following data objects:

- SchoolInfo
- StudentPersonal
- StudentSchoolEnrollment

The student data fields required by a given implementation can include any element or attribute defined by these objects. Through customizable mappings in the Student Locator configuration file, administrators can instruct the agent where to obtain the values needed for StudentLocator transactions.

Data elements that are not represented by the above objects cannot be included in Student Locator transactions.

SIS systems may define custom fields using SIF_ExtendedElement. Extended elements may be incorporated into Student Locator transactions if mapped in the configuration file. Statewide implementations are not encouraged to rely on these customizations, however, as it may not be possible to adjust all SIS systems to provide them.

Code Translations

If needed, both Student Locator and Student Resolver can perform translations on fields that contain a code. For example, if a district uses the SIF code of “0K” to describe the Kindergarten grade level, but the state requires all grade levels to use “K”, a translation table could be created to achieve that. The translation could occur at either the district level (by customizing Student Locator) or at the state level (by customizing Student Resolver).

Inclusion Rules for Students

Not all StudentPersonal objects published by an SIS are subject to StudentLocator transactions. The Student Locator agent will follow these rules when determining whether or not to include a given student in a transaction:

- **Rule #1. Student Locator only issues transactions for Home School enrollments.** This only applies to students that are concurrently enrolled in two or more schools from the SIS and SIF perspective. It prevents Student Locator from sending more than one transaction per student.
- **Rule #2. Student Locator only issues transactions for students that have an enrolled in the active school year (regardless of whether that student is active or not).** The *Active School Year* is determined by the Student Locator configuration settings. In the case where the student has enrollment records from more than one Home school, the most recent will be used when passing a Home school number to Student Resolver.
- **Rule #3. SLF adapter does not filter out the student.** The SLF adapter is given an opportunity to filter out students by applying its own business rules. For exam-

ple, the adapter may examine the existing StatePrId of the student and decide to exclude the student if a valid state ID is already assigned to it.

Summary of States

This table summarizes the possible state transitions:

From >	State	> To
	1=REQUEST	2=REQUEST_IN_PROGRESS
1=REQUEST	2=REQUEST_IN_PROGRESS	3=SYSTEM_MATCH 4=SYSTEM_NEW 5=USER_MATCH 6=USER_NEW 10=ERROR
2=REQUEST_IN_PROGRESS	3=SYSTEM_MATCH	9=COMPLETE
2=REQUEST_IN_PROGRESS	4=SYSTEM_NEW	9=COMPLETE
2=REQUEST_IN_PROGRESS	5=USER_MATCH	9=COMPLETE
2=REQUEST_IN_PROGRESS	6=USER_NEW	9=COMPLETE
2=REQUEST_IN_PROGRESS	7=UNRESOLVED	8=RESOLUTION_IN_PROGRESS
7=UNRESOLVED	8=RESOLUTION_IN_PROGRESS	5=USER_MATCH 6=USER_NEW 9=COMPLETE 10=ERROR
3=SYSTEM_MATCH 4=SYSTEM_NEW 5=USER_MATCH 6=USER_NEW 8=RESOLUTION_IN_PROGRESS	9=COMPLETE	
3=SYSTEM_MATCH 4=SYSTEM_NEW 5=USER_MATCH 6=USER_NEW 8=RESOLUTION_IN_PROGRESS	10=ERROR	

3. Elements Supported by the SLF Agent

Required Data Elements

Most ID management applications and SSID Vendor Databases require the data elements shown below in order to start a successful Student Locator transaction.

Data Element	Supplied By Object
Admission Reason	StudentPersonal
Native Language	StudentPersonal
Birthplace City	StudentPersonal
First Name	StudentPersonal
Last Name	StudentPersonal
Middle Name	StudentPersonal
Ethnicity Code	StudentPersonal
Date of Birth	StudentPersonal
Gender	StudentPersonal

Ohio’s SLF Agent also uses two optional elements: **IRN_CurrentBuilding** and **IRN_Current District**.

Though other elements that are required for SLF to function correctly may appear in the user interface (UI), **only** these 11 objects (9 required and 2 optional) are collected in Ohio.

Note: The SIF Object/Element mappings for each SLF Locator Agent instance may vary from those listed.

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Supplement Trailer