

Cloud Deployment and Testing of Internet Data Submission Applications

THE VALUE OF PERFORMANCE.

NORTHROP GRUMMAN

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Applications



- **Filing Information Returns Electronically (FIRE)**

- Submission of tax information returns – mostly data about payments made by financial institutions (Forms 1042-S, 1097, 1098, 1099, 3921, 3922, 5498, 8027, 8955-SSA, and W-2G)
- Flat files, fixed-length records
- Peak loads at filing deadlines
- Personally Identifiable Information (PII)

Sample 1099-R Form

| | | | | |
|---|---|--|--|---|
| PAYEE'S name, street address, city, state and ZIP code J&J Public Employees Ret. Sys. 611 S. PARKWAY AVE, SUITE 1200 TORREON, TEXAS 76601-3223 T: 817-275-5737 M: 604600 | | 1 Gross distribution (9,456.50) | Distribution Year 2012 | Recipient's Federal Tax ID Number 582.70 |
| PAYEE'S Federal ID number 48-0944770 | SUPPLEMENTAL PAYEE'S Federal ID number 999-99-9999 | 2 Capital gain distribution (check or mark box) <input type="checkbox"/> | 3 Total amount not withheld 582.70 | Recipient's State Tax ID Number 12 0219 |
| PAYEE'S Federal ID number, street address, city, state, and ZIP code I. RETIREE 1234 FIRST STREET ANYTOWN, KS 65000 | | 4 Employee's name, street address, city, state, and ZIP code 499.54 | 5 Net investment income 18,771.23 | Recipient's Social Security Number 123456789 |
| Account number 98XXXXXXXXXXXX | | 6 Distribution code R | 7 Date 12/31/12 | Recipient's Other ID Number 123456789 |
| | | 8 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | 9 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | Recipient's Other ID Number 123456789 |
| | | 10 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | 11 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | Recipient's Other ID Number 123456789 |
| | | 12 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | 13 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | Recipient's Other ID Number 123456789 |
| | | 14 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | 15 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | Recipient's Other ID Number 123456789 |
| | | 16 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | 17 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | Recipient's Other ID Number 123456789 |
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| | | 22 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | 23 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | Recipient's Other ID Number 123456789 |
| | | 24 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | 25 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | Recipient's Other ID Number 123456789 |
| | | 26 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | 27 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | Recipient's Other ID Number 123456789 |
| | | 28 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | 29 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | Recipient's Other ID Number 123456789 |
| | | 30 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | 31 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | Recipient's Other ID Number 123456789 |
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| | | 38 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | 39 This amount is from: <input type="checkbox"/> Traditional IRA <input type="checkbox"/> Rollover from IRA <input type="checkbox"/> Rollover from 401(k) | Recipient's Other ID Number 123456789 |
| | | 39 EXCLUDED TO 123456789 5,572.23 | | |

- **Affordable Care Act (ACA) Information Returns (AIR)**

- Submission of information returns by Insurers, Employers, and Exchanges (Forms 8963, 1094-B, 1095-A, 1095-B, 1095-C)
- XML format with dynamic repeating elements
- Volumes TBD
- Personally Identifiable Information (PII)

Form 8963
 January 2014
 Department of the Treasury
 Internal Revenue Service

OMB Number 1545-0045
 Publicly Available Information

Report of Health Insurance Provider Information
 Information about Form 1094-B and 1095 forms
 Read the instructions before you complete Form 8963.

Check only one box below (see instructions):
 Single-person covered entity
 2a Agent of an affiliated group
 2b Other

Corrected report (see instructions)

Employer identification number (EIN) 15-0017929
 Number of controlled group members included in Schedule A (see instructions) 1
 Reporting year 2014

Name VICTORY
 Address (number and street) 123 MAIN ST
 Address (continued)
 City, town, or post office (Foreign addresses should complete fields below - see instructions) VICTORY State AL ZIP code 35114
 Foreign country name Foreign province/state/country Foreign postal code

PART I Signature of Official Signing on Behalf of the Single-Person Covered Entity or Designated Entity (Agent of an Affiliated Group, or Other Designated Entity) and Consent by the Designated Entity (if applicable)

Under penalties of perjury, I declare that I have examined this report, including accompanying statements and, to the best of my knowledge and belief, it is true, correct, and complete. I further certify that I am an officer of the single-person covered entity or the designated entity, and that I am duly authorized to sign this report on behalf of that covered entity.

If you checked box 2a or 2b, also declare that the above named entity is the agent of an affiliated group or other designated entity (see the instructions). I understand that the designated entity will receive IRS communications relating to the tax imposed by ACA section 9012 and is to pay this tax to the IRS on behalf of the controlled group. Each entity that is a member of the controlled group is jointly and severally liable for this tax. Further, each of the above entity is the controlled group designated in the report (including the choice of the designated entity reported on the report). Each member of the controlled group that is a covered entity as of the end of the day on December 31, 2013, is jointly and severally liable for any applicable penalty under ACA section 9012. If the designated entity is selected by the IRS, each entity in this report is deemed to consent to the choice of designated entity.

Sign Here
 Printed name of signing official
 Signature of official
 Date signed
 Business phone number
 Business tax number
 Title of signing official

PART II Alternate Contact Person Designate (see instructions)

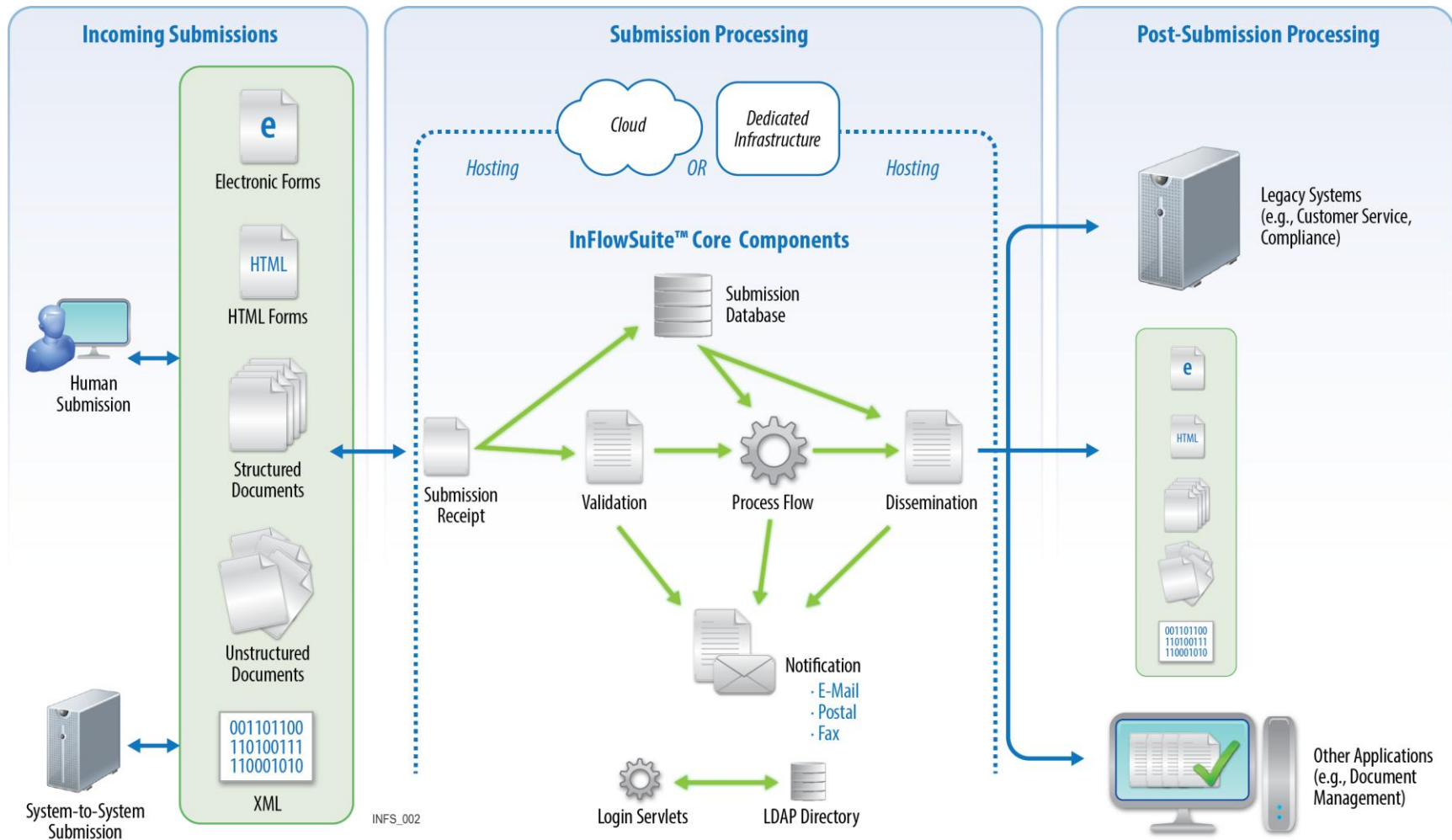
Do you wish to designate an employee to discuss this report with the IRS? Yes No
 Name of designee
 Designee phone number
 Title of designee
 Designee fax number

File the form electronically using a File or mail Form 8963 to:
 Internal Revenue Service
 1975 Ruston White Boulevard
 Mail Stop 4010 097
 Daphn, UT 84604

Send the forms in a flat mailing envelope (not folded). Do not staple, seal, or tape any of these forms. If you are sending a single number of forms in conveniently sized packages, write your name on each package and number the packages consecutively.
 United States postage regulations require forms and packages to be sent by First Class Mail. However, you may use private delivery services such as DHL, FedEx and UPS.

For Paperwork Reduction Act notice, see the separate instructions. Page 1 of 1 Cat. No. 37760K Form 8963 (1-2014)

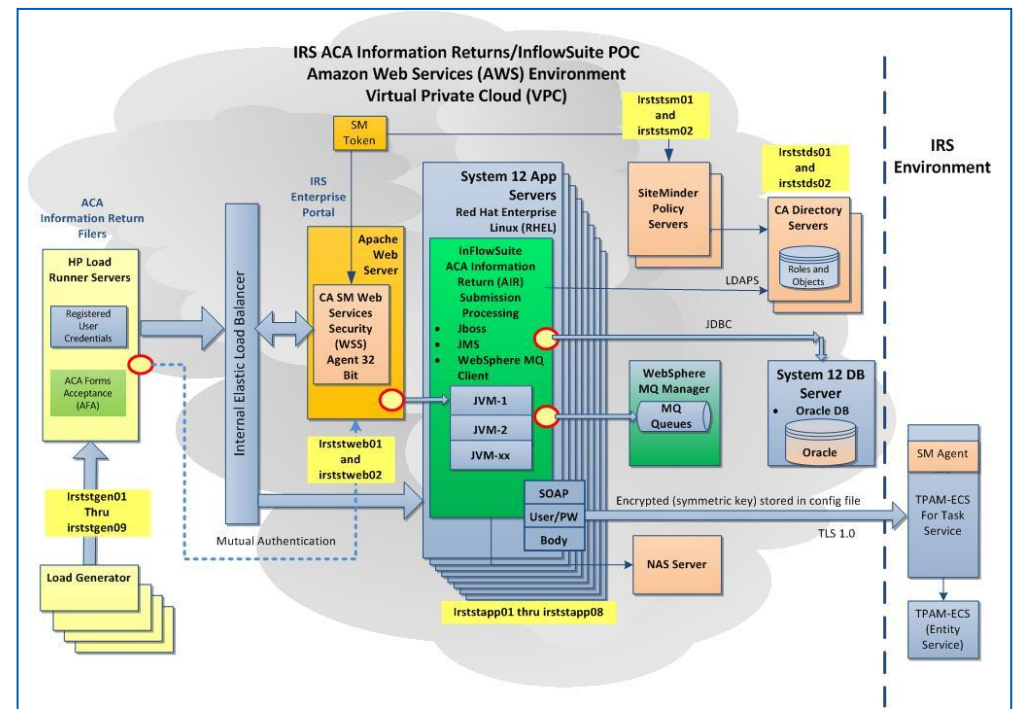
InFlowSuite™ Architecture



COTS for extremely high volume and highly complex submission processing

1099/1095 Proof of Concept Purpose

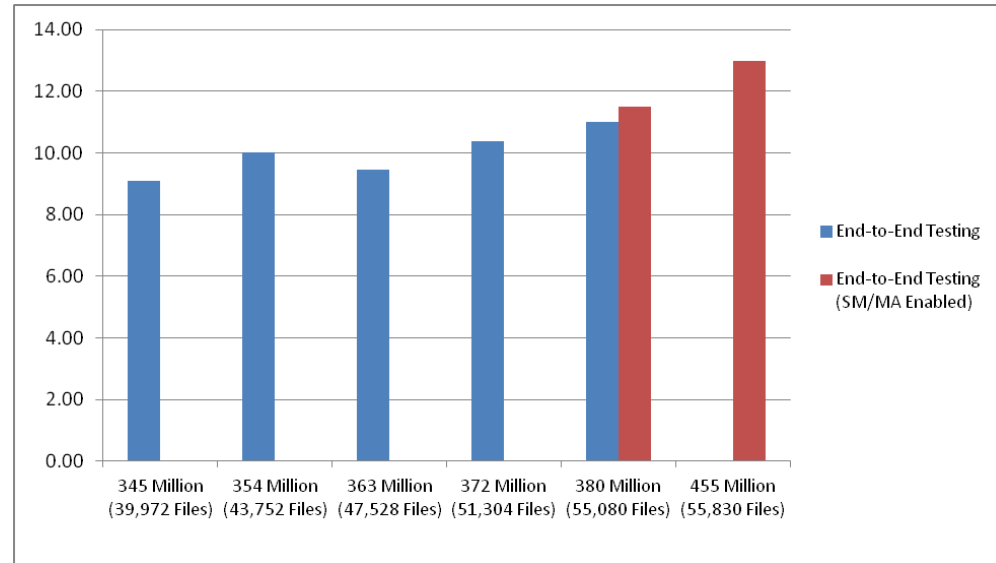
- Demonstrate ability to simultaneously process Tax and Healthcare Information Returns (1099-INT, 1099-B, 1095-B) at peak day volumes
- Expand validation to all Pub 1220 required fields for highest-volume FIRE/AMMPS Information Returns (1099-INT and 1099-B)
- Assess the ability to leverage FedRAMP Certified Amazon Web Services (AWS) Virtual Private Cloud (VPC) for IRS Development and Testing
- Measure impact of security controls (SiteMinder/Mutual Authentication)



1099/1095 Proof of Concept Performance Results

- FIRE + AIR 2017 Peak Day

- 345M IRs in 40K files
 - 1099-B volume: 217,815,577
 - 1099-INT volume: 93,349,533
 - 1095-B volume: 34,680,000
- File size range: 1 to 2.5M IRs/file
 - 50% small (< 1K)
 - 38% medium (1K – 100K)
 - 12% large (> 100K)
- Processed in 9 hours



- Linear scaling as volumes increased 3%, 6%, 9%, 12% beyond anticipated peak day
- Processed 2x FIRE actual peak day (455M) with security in 13 hours

Throughput scales linearly; easily handles very high volumes

- Lessons Learned

- For highest performance, iterative tuning is necessary
 - Parameter values differ from non-virtualized environments
 - Required modification of parameters associated with O/S Kernel, Directory (LDAP), Database, Application Server, and File storage
- “Pre-warming” Front-End Processer is required for high-volume tests
 - Elastic Load Balancer triggers automatic throttling (apparent Denial of Service attack) otherwise
- Very large file/LoadRunner SOA timeout issue
 - Timeout parameter for LoadRunner SOA has maximum value of 1 minute
 - Batch following 10 GB batch submitted successfully, but showed as error
 - Acknowledgement not sent within timeout due to file transfer
- Ephemeral storage is fastest option for temporary file storage
 - Faster than NAS, but does not persist once virtual instance is stopped

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