

Fedora 4.7.3 Release Notes

Release date: June 7, 2017

We are proud to announce the release of Fedora 4.7.3.

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If you are running a 4.7.1 or 4.7.2 instance of Fedora that had been upgraded from a previous version (4.7.0 or earlier), and you do not believe it has ever been shut down since upgrading to 4.7.1 or 4.7.2, you **MUST** make a backup via [fcr:backup](#) immediately. To recover from this bug, take a backup (which will be corrupted in a particular way), fix the backup, and restore into an instance of 4.7.3. All users should take a backup of their Fedora instance before upgrading to 4.7.3 just to be safe.

Resources

- This release requires Java 8
- [Downloads](#)
- [Javadocs](#)

Team

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Summary

The Fedora 4.7.3 release is a backwards compatible refinement of the previous release, which fixes a namespace-corrupting bug that has the effect of Fedora being unable to successfully start after having been shut down.

If you are running a 4.7.1 or 4.7.2 instance of Fedora that had been upgraded from a previous version (4.7.0 or earlier), and you do not believe it has ever been shut down since upgrading to 4.7.1 or 4.7.2, you **MUST** make a backup via [fcr:backup](#) immediately. To recover from this bug, take a backup (which will be corrupted in a particular way), fix the backup, and restore into an instance of 4.7.3. All users should take a backup of their Fedora instance before upgrading to 4.7.3 just to be safe.

Detailed Bug Remediation Notes

Who is affected

This occurs when all the following conditions are true:

1. An earlier version of Fedora had been used to create objects, before upgrading to 4.7.1 and 4.7.2
2. One of the objects created in the repository prior to upgrade to 4.7.1 or 4.7.2 contains a triple using one or more of the following namespaces, and the prefix does NOT match the one shown:
 - a. skos: <http://www.w3.org/2004/02/skos/core#>
 - b. acl: <http://www.w3.org/ns/auth/acl#>
 - c. iana: <http://www.iana.org/assignments/relation/>
 - d. event: <http://fedora.info/definitions/v4/event#>
 - e. owl: <http://www.w3.org/2002/07/owl#>
 - f. prov: <http://www.w3.org/ns/prov#>
 - g. config: info:fedoraconfig/

For example, if an object prior to upgrade to Fedora 4.7.1 or 4.7.2 looked like the following, it would be OK since the prefix matches the above table:

```
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .

<> skos:prefLabel "foo" .
```

On the other hand, if an object prior to the upgrade to 4.7.1 or 4.7.2 looked like this, it will cause the namespace corrupting bug:

```
@prefix ns004: <http://www.w3.org/2004/02/skos/core#> .

<> ns004:prefLabel "foo" .
```

Viewing the objects in a running 4.7.1 or 4.7.2 instance is insufficient for determining if this bug affects you, as the prefixes that you are shown will not necessarily match the prefixes originally present in the object. If you have any objects containing triples whose predicate or object contains one of the above namespaces, you are at risk.

What is the problem

Fedora 4.7.1 and 4.7.2 added some global, hard-coded namespaces and prefixes to the `fedora-node-types.cnd` file. Any existing namespaces that conflict with these new hard-coded namespaces are deleted/overwritten when Fedora exits. This results in an inconsistent Modeshape database. The repository will function in this inconsistent state until a re-started is attempted, which will fail.

How to fix the issue

At a high-level you need to:

1. Take a backup
2. Fix the backup manually
3. Restore the backup into a new repository

Since it is somewhat difficult to determine if your repository is truly affected, a reasonable upgrade plan from 4.7.1 or 4.7.2 to 4.7.3 is:

1. Take a backup
2. Try simply upgrading 4.7.3 over the existing repository. If it starts up successfully, you are not affected by the issue, and are done!
3. If Fedora 4.7.3 fails to start, then you need to fix the backup manually, and restore into an empty repository

Detailed instructions

1. Create backup
 - a. `curl -X POST http://localhost:8080/fcrepo/rest/fcr:backup`
 - b. You will be given a directory in message body. For example: `C:\Users\Dev\projects\dcs-package-ingest\package-ingest-integration\target\cargo\configurations\tomcat8x\temp\1496329063578-0`
 - c. You will see one or more files named `documents_N.bin.gz` where N is a number like 000001 (e.g. `documents_000001.bin.gz`)
2. Unzip and inspect the `documents_N.bin.gz` files. Look for modeshape node whose `primaryType` is `'mode:namespaces'`
 - i. ``jq`` is a great tool for inspecting very large json files. To pretty-print so that tools like `grep` can be used, try `cat documents_000001.bin | jq .`
 - a. Grep for `'namespaces'`. You'll see something like:

```

{
  "metadata": {
    "id": "936198c317f1e7mode:namespaces"
  },
  "content": {
    "key": "936198c317f1e7mode:namespaces",
    "parent": "936198c317f1e7jcr:system",
    "properties": {
      "http://www.jcp.org/jcr/1.0": {
        "primaryType": {
          "$name": "mode:namespaces"
        }
      }
    },
    "children": [
      {
        "key": "936198c317f1e7mode:namespaces-http://www.jcp.org/jcr/1.0",
        "name": "jcr"
      },
      {
        "key": "936198c317f1e7mode:namespaces-http://www.jcp.org/jcr/nt/1.0",
        "name": "nt"
      },
      {
        "key": "936198c317f1e7mode:namespaces-http://www.jcp.org/jcr/mix/1.0",
        "name": "mix"
      },
      {
        "key": "936198c317f1e7mode:namespaces-http://www.w3.org/2004/02/skos/core#",
        "name": "skos"
      }
    ]
  }
}

```

The dump contains a json object whose primary type is "mode:namespaces". Nested within it is a "children" array that enumerates the namespaces known to modeshape. It appears that Modeshape chooses a single random prefix on all internal identifiers. Acknowledging that prefix, the modeshape namespaces enumeration follows a simple and obvious pattern.

When Fedora encounters a novel rdf namespace and prefix, it adds it to the map. In many cases, the prefix is auto-generated, e.g. "ns001". So if Fedora encountered a SKOS term, at any point, it may contain a namespace entry like:

```

{
  "key": "936198c317f1e7mode:namespaces-http://www.w3.org/2004/02/skos/core#",
  "name": "ns004"
}

```

In Fedora 4.7.1 and 4.7.2, a new set of hard-coded namespaces were published in the internal .cnd file used by modeshape. When started, any pre-existing namespaces that match the hard-coded namespaces, yet differ by prefix, are overwritten. So the namespaces table may now contain an entry:

```

{
  "key": "936198c317f1e7mode:namespaces-http://www.w3.org/2004/02/skos/core#",
  "name": "skos"
}

```

This overwriting of the namespaces table is problematic. Objects that existed before the repository had been upgraded to 4.7.1 or 4.7.2 will still contain their `_old_` namespace references, such as:

```
{
  "metadata": {
    "id": "936198c317f1e7/jcr:system/jcr:nodeTypes/{httpwww.w3.org200402skoscore#}Concept"
  },
  "content": {
    "key": "936198c317f1e7/jcr:system/jcr:nodeTypes/{httpwww.w3.org200402skoscore#}Concept",
    "parent": "936198c317f1e7jcr:nodeTypes",
    "properties": {
      "http://www.jcp.org/jcr/1.0": {
        "isQueryable": true,
        "primaryType": {
          "$name": "nt:nodeType"
        },
        "supertypes": [],
        "hasOrderableChildNodes": false,
        "isMixin": true,
        "isAbstract": false,
        "nodeTypeName": "ns004:Concept" << NOTE: THIS IS THE PROBLEMATIC LINE <<
      }
    }
  }
}
```

This inconsistency is at the root of the problem.

3. For each dangling namespace, add a new entry to the mode:namespaces node, for example:

```
"children": [
  {
    "key": "936198c317f1e7mode:namespaces-http://www.jcp.org/jcr/1.0",
    "name": "jcr"
  },
  {
    "key": "936198c317f1e7mode:namespaces-http://www.jcp.org/jcr/nt/1.0",
    "name": "nt"
  },
  {
    "key": "936198c317f1e7mode:namespaces-http://www.jcp.org/jcr/mix/1.0",
    "name": "mix"
  },
  {
    "key": "936198c317f1e7mode:namespaces-http://www.w3.org/2004/02/skos/core#",
    "name": "skos"
  },
  {
    "key": "936198c317f1e7mode:namespaces-http://www.w3.org/2004/02/skos/core#",
    "name": "ns004"
  }
]
```

4. After the namespaces node has been fixed, gzip the file so that it retains its original name

5. Restore the backup via fcr:restore

Alternate instructions

In the case that you have upgraded to either 4.7.1 or 4.7.2 *and* have stopped your server *and* are not able to restart your server with an error in your logs like the following:

```
org.modeshape.jcr.value.ValueFormatException: Error converting "ns00x:Object" from String to a Name
```

..this [fedora-tech mailing list thread](#) provides guidance for remediation.

Changes

Complete Listing of Resolved Tickets

key	summary	type	created	updated	due	assignee	reporter	priority	status	resolution
Unable to locate Jira server for this macro. It may be due to Application Link configuration.										