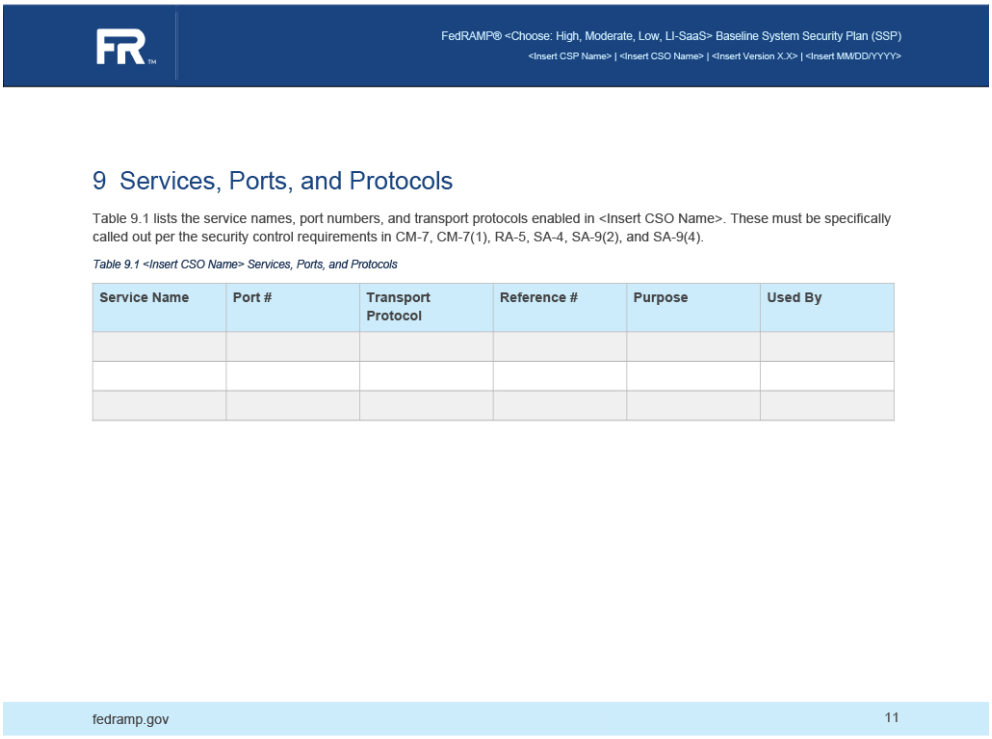
9. Services, Ports and Protocols

Entries in the services, ports, and protocols table are represented as component assemblies, with the component-type flag set to "service". Use a protocol assembly for each protocol associated with the service. For a single port, set the port-range start flag and end flag to the same value.



OSCAL Representation

```
system-security-plan:
  uuid: 11111111-2222-4000-8000-000000000000
  system-implementation:
    components:
    - uuid: 11111111-2222-4000-8000-009000500004
      type: service
      title: API Service
      description: 'A service offered by this system to external systems, such as
        an API. As a result, communication crosses the boundary.



        Describe the service and what it is used for.'
      props:
      - name: implementation-point
```

```
    value: internal
  - name: public
    value: 'yes'
  - name: information-type
    ns: http://fedramp.gov/ns/oscal
    value: C.3.5.1
    class: incoming
  - name: information-type
    ns: http://fedramp.gov/ns/oscal
    value: C.3.5.8
    class: outgoing
  - name: connection-security
    ns: http://fedramp.gov/ns/oscal
    value: tls-1.3
  - name: authentication-method
    ns: http://fedramp.gov/ns/oscal
    value: 'yes'
  - name: nature-of-agreement
    ns: http://fedramp.gov/ns/oscal
    value: other
  - name: allows-authenticated-scan
    value: 'no'
  - name: scan-type
    ns: http://fedramp.gov/ns/oscal
    value: infrastructure
links:
- href: '#11111111-2222-4000-8000-009000100003'
  rel: used-by
- href: '#11111111-2222-4000-8000-009000100004'
  rel: used-by
- href: '#11111111-2222-4000-8000-001000000048'
  rel: poam-item
  resource-fragment: 11111111-3333-4000-8000-000000000004
- href: https://api.example.com/v1
  rel: api
status:
  state: operational
responsible-roles:
- role-id: administrator
  props:
```

```
      - name: privilege-uuid
        ns: http://fedramp.gov/ns/oscal
        value: 11111111-2222-4000-8000-008000000004
      party-uuids:
      - 11111111-2222-4000-8000-004000000010
      - 11111111-2222-4000-8000-004000000011
      - 11111111-2222-4000-8000-004000000012
    - role-id: provider
      party-uuids:
      - 11111111-2222-4000-8000-004000000001
  protocols:
  - uuid: 11111111-2222-4000-8000-010000000002
    name: tls
    title: API Service
    port-ranges:
    - start: '443'
      end: '443'
      transport: TCP
```

To represent **Network Services and Ports** within an OSCAL System Security Plan, the data is organized under the `system-implementation` section, specifically categorized by components where the `type` is defined as `service`, `hardware` or `software`.

The mapping for each service entry includes the following technical details:

- **Service Identity:** Each entry starts with a `title` that identifies the specific service or application name (e.g., "HTTPS" or "SSH").
- **Protocol Configuration:** The specific network `protocol` name (such as TCP or UDP) is identified to define how the service communicates.
- **Port Management:** Detailed port information is captured within a `port-range`, specifying the exact `start` and `end` values. This also includes the `transport` layer designation to ensure the specific communication path is fully defined.
- **Functional Justification:** A dedicated `purpose` field provides the business or technical rationale for why the service is required within the system boundary.
- **Component Relationships:** The model tracks which internal system elements are utilizing the service by linking to the `title` of other defined components via their unique identifiers (UUIDs).

For systems with multiple services, each is documented as an individual service component, with the ability to define multiple protocols and port ranges within each entry to maintain a complete and granular inventory.

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