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Intelligent Optical Internetworking Architecture

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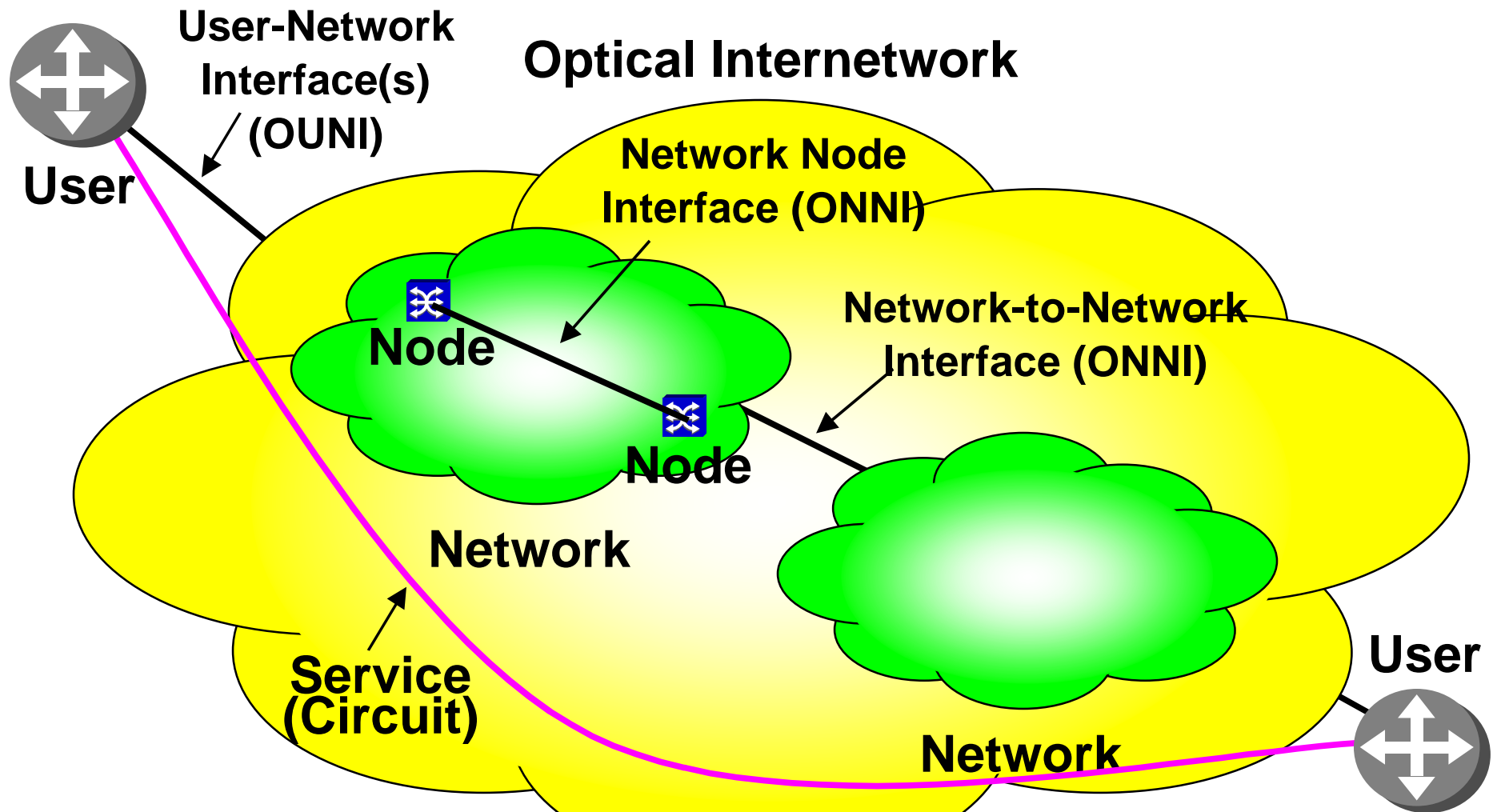**ddp@ciena.com**
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Abstract

- **This contribution presents a basic architecture and reference model for Optical Internetworks. It also proposes the creation of an OIF Optical Signaling and Routing WG.**

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Introduction

- **Optical Internetwork Objects and Interfaces**
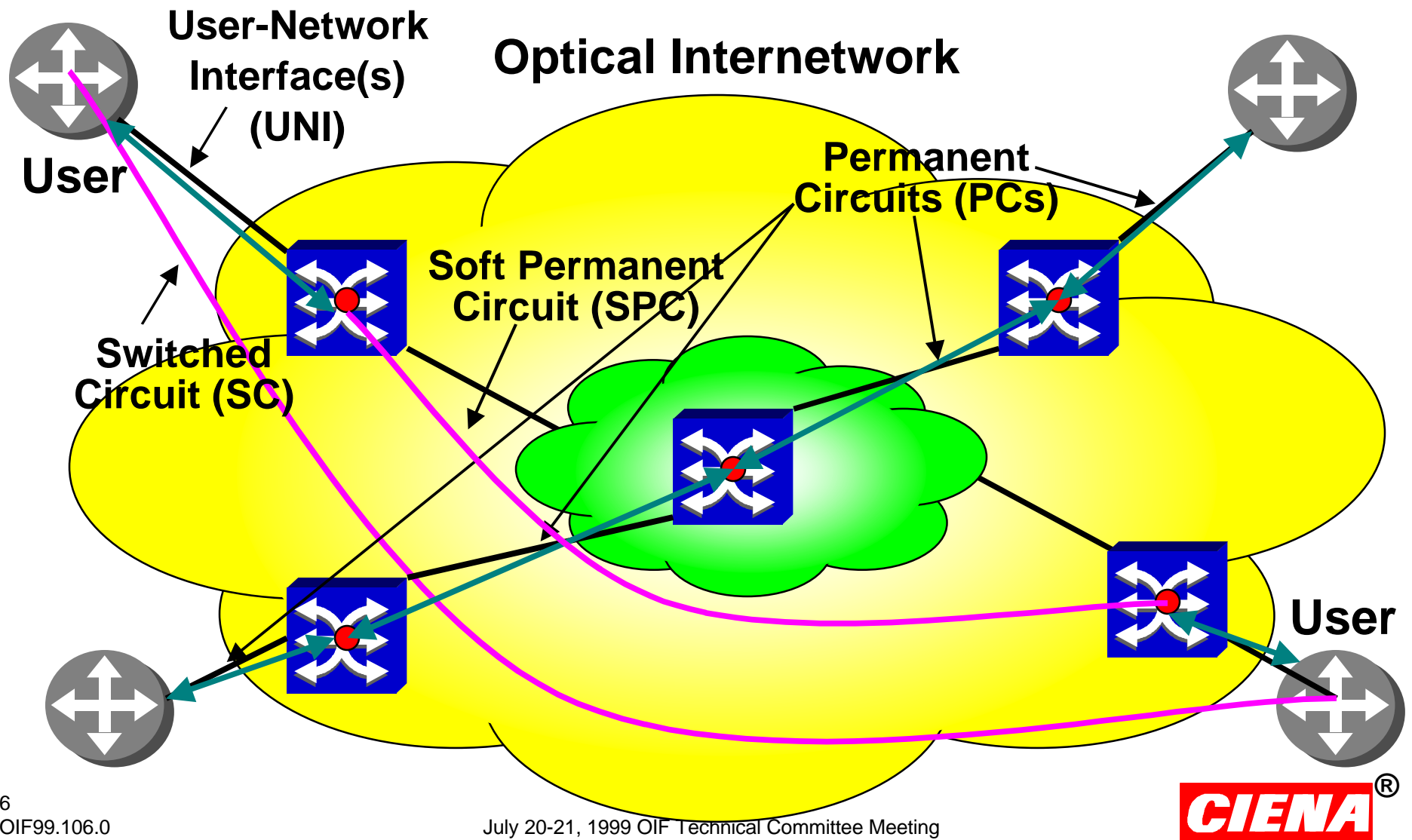
- **Circuit Types**

- **Signaling and Routing Protocols**

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Optical Internetwork Objects and Interfaces
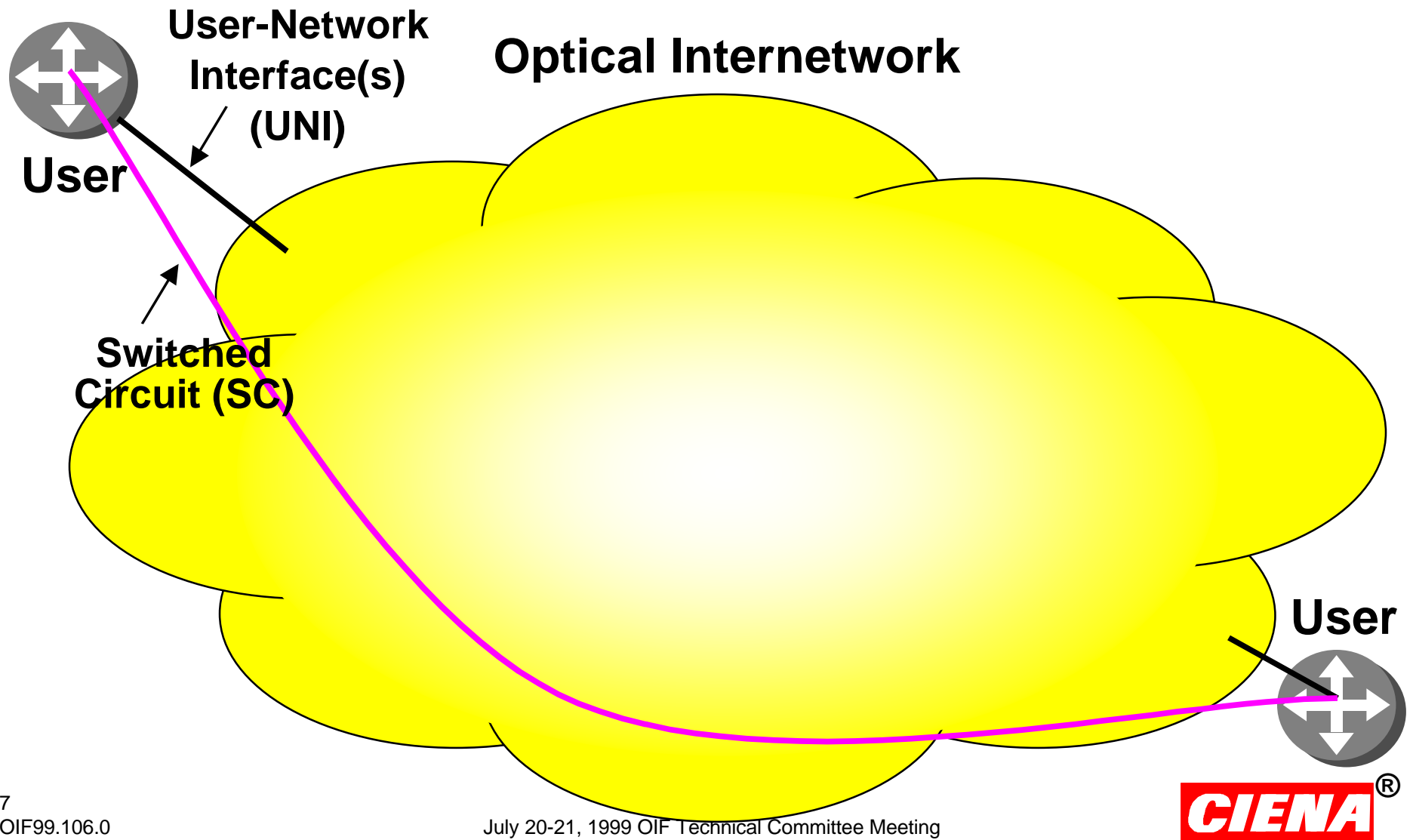
User-Network Interface(s) (OUNI)

Optical Internetwork

User

Network Node Interface (ONNI)

Node

Network-to-Network Interface (ONNI)

Node

Network

Service (Circuit)

User

Network

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Motion 1

- **The Optical Internetworking Architecture will have the concepts:**

  - **Optical Internetwork**

  - **Optical User**

  - **Optical Network**

  - **Optical Node**

  - **Optical User-Network Interface (OUNI)**
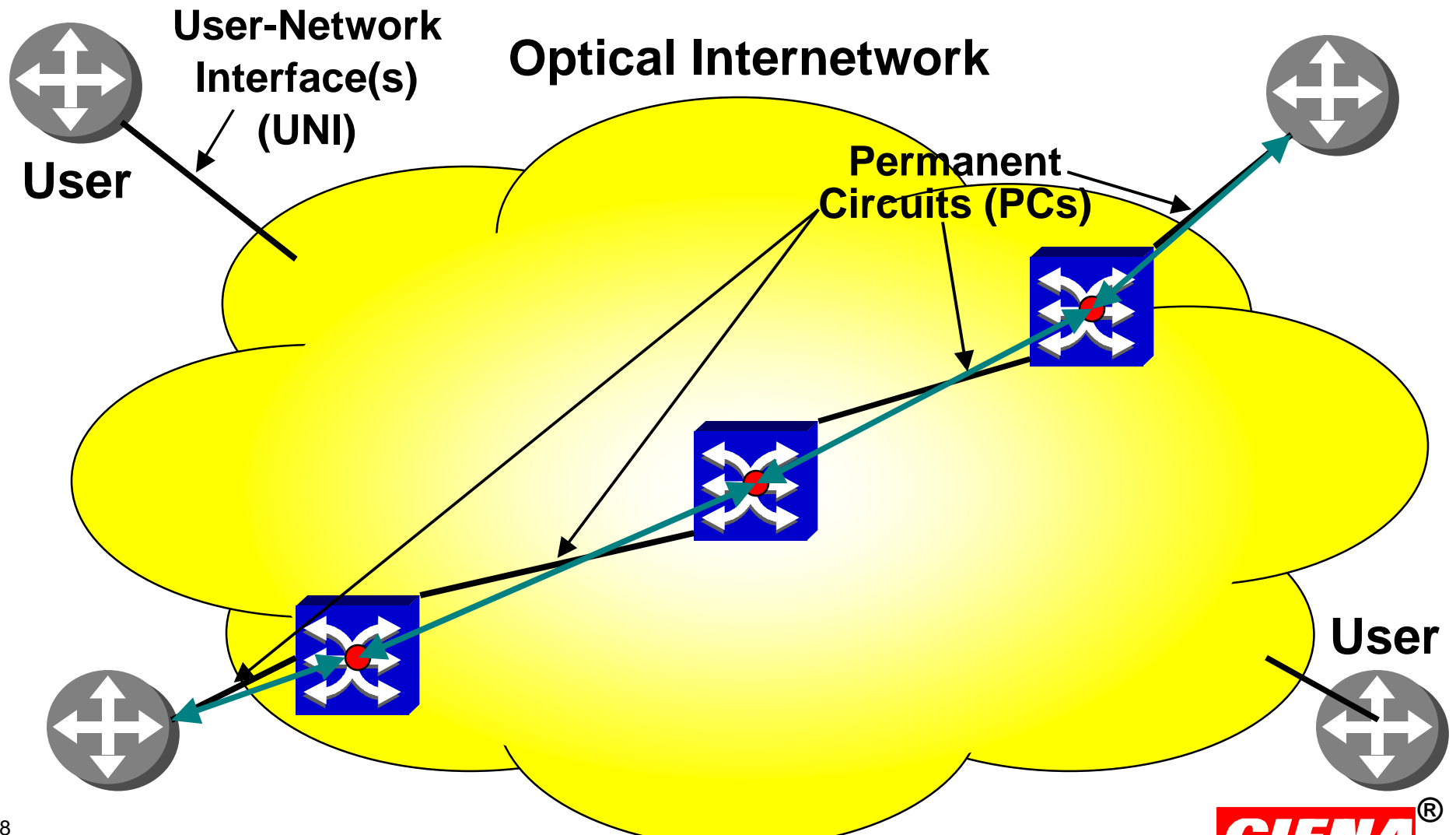
  - **Optical Network Node Interface (ONNI)**

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Circuit Types

User-Network Interface(s) (UNI)

Optical Internetwork

User

Permanent Circuits (PCs)

Soft Permanent Circuit (SPC)

Switched Circuit (SC)

User

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Circuit Types:
Switched Circuit (SC)

User-Network Interface(s) (UNI)

Optical Internetwork

User

Switched Circuit (SC)

User

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Circuit Types:
Permanent Circuits (PCs)

User-Network Interface(s) (UNI)

Optical Internetwork

User

Permanent Circuits (PCs)

User

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Circuit Types:
Soft Permanent Circuit (SPC)

User-Network Interface(s) (UNI)

Optical Internetwork

User

Soft Permanent Circuit (SPC)

User

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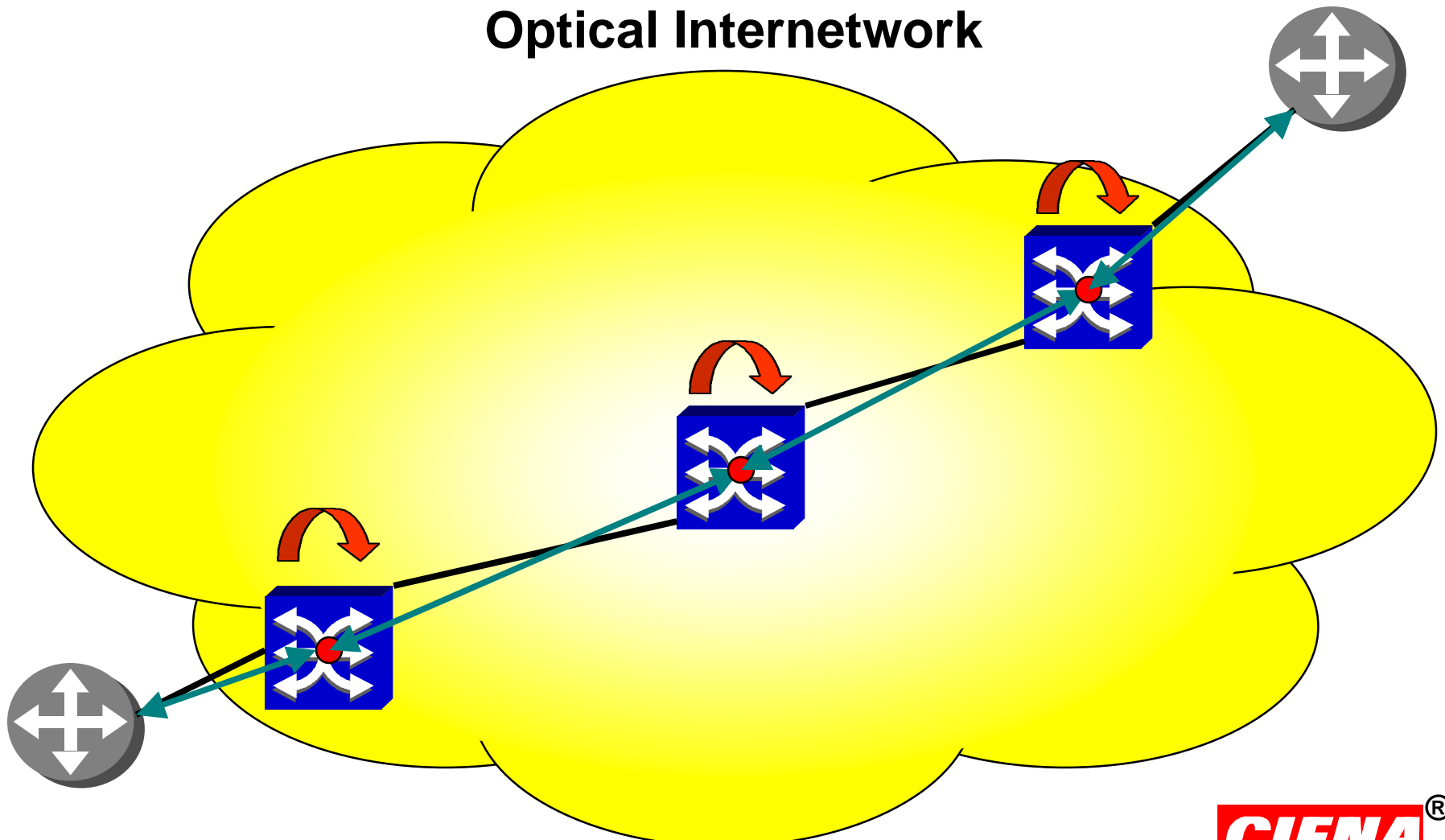
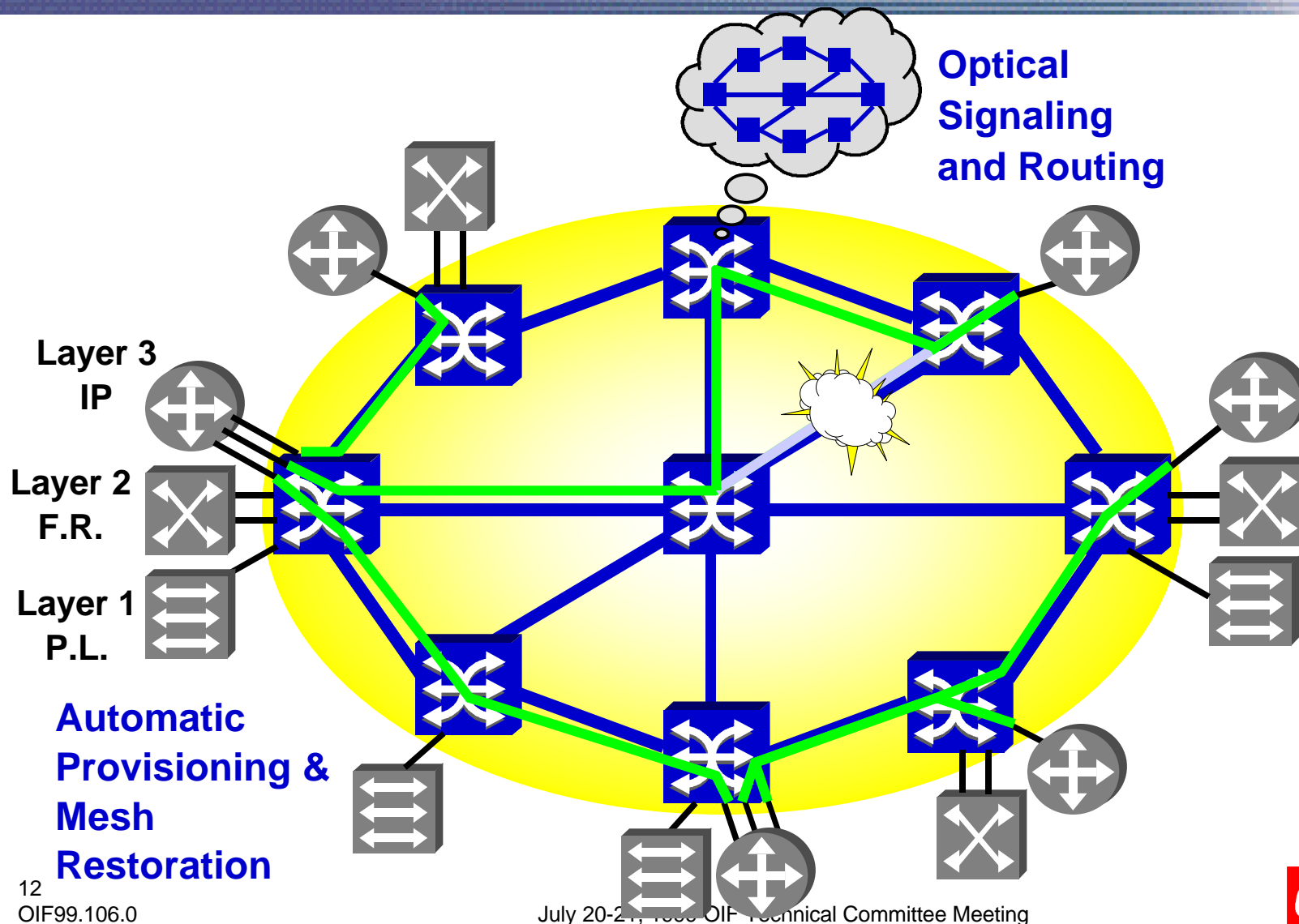**CIENA** ®

Motion 2

- **The Optical Internetworking Architecture will have the concepts:**

    - **Switched Circuit (SC)**

    - **Permanent Circuit (PC)**

    - **Soft Permanent Circuit (SPC)**

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PCs are Difficult to Manage

Optical Internetwork

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Intelligent Optical Internetwork Utilizing Optical Signaling and Routing

Optical Signaling and Routing

Layer 3 IP

Layer 2 F.R.

Layer 1 P.L.

Automatic Provisioning & Mesh Restoration

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OSRP Protocols

- ## *Routing*

  - Distribution of routing information and optimal route determination

    - Topology state database

    - Constraint-Based Link State Routing

- ## *Signaling*

  - Establishment, maintenance and tear down of connections

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Motion 3

- **The OIF TC will form a new Working Group to develop an Optical Signaling and Routing Protocol for Optical Internetworks that will:**

    - **Provide rapid multi-vendor interoperable service provisioning utilizing signaling technology; and**

    - **Provide rapid mesh-based restoration of service using Constraint-Based Link State routing technology.**

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